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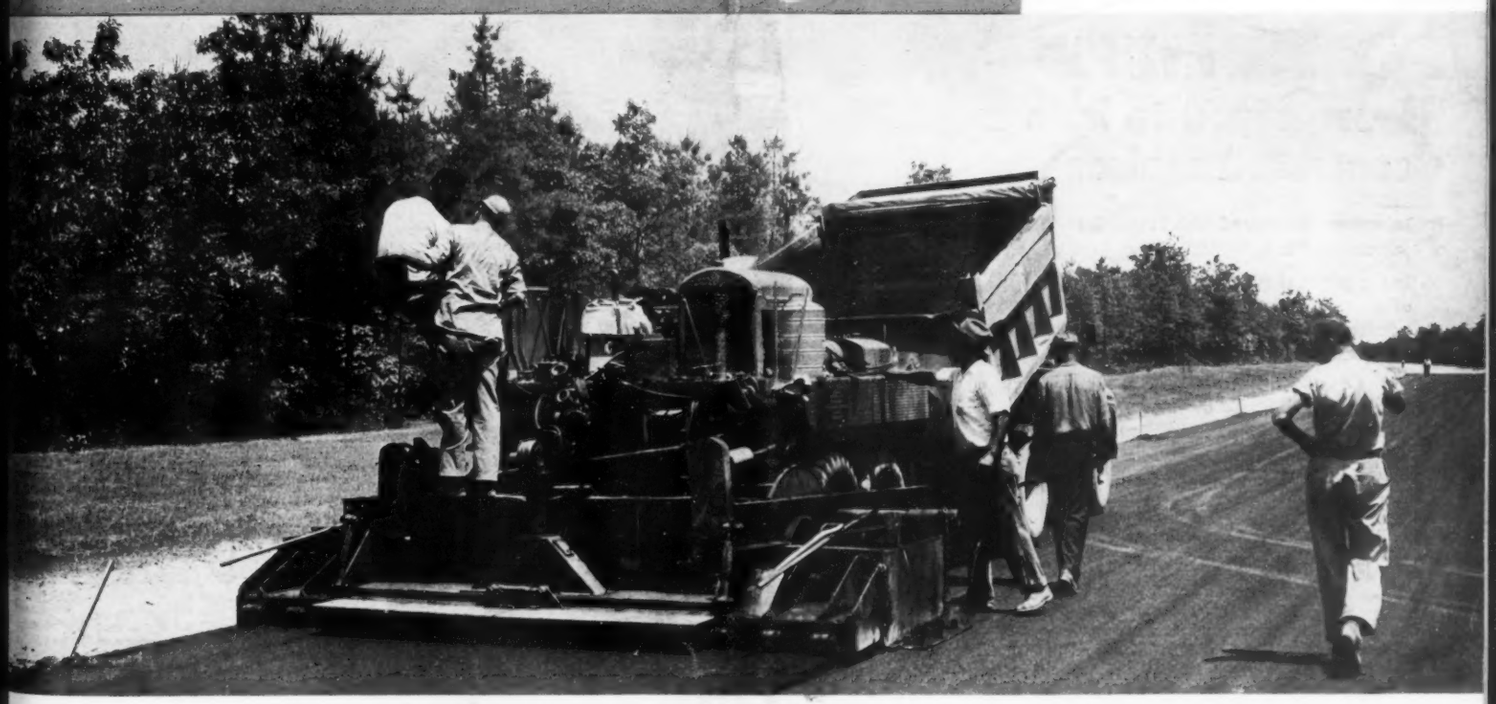
OCT 18 1954

Contractors and Engineers

magazine of modern construction

OCTOBER 1954



Fast blacktop paving on New Jersey's Garden State Parkway is credited to equipment like the new 6,000-pound Cedarapids automatic asphalt plant, at top. Keeping up with the high production is this new Blaw-Knox rubber-tired paver which is laying a 12-foot lane. *Page 8*

How To Get Better Quality Concrete With Varied Job Conditions

Although materials and conditions vary from job to job, better quality concrete is a constant when Pozzolith is used. A good example is the experience on the garage job described below.

The basic difference in the three formulations of Pozzolith pertains to setting time requirements, and to those properties that are related directly or indirectly to setting time. With all three formulations, however, the following benefits are obtained:

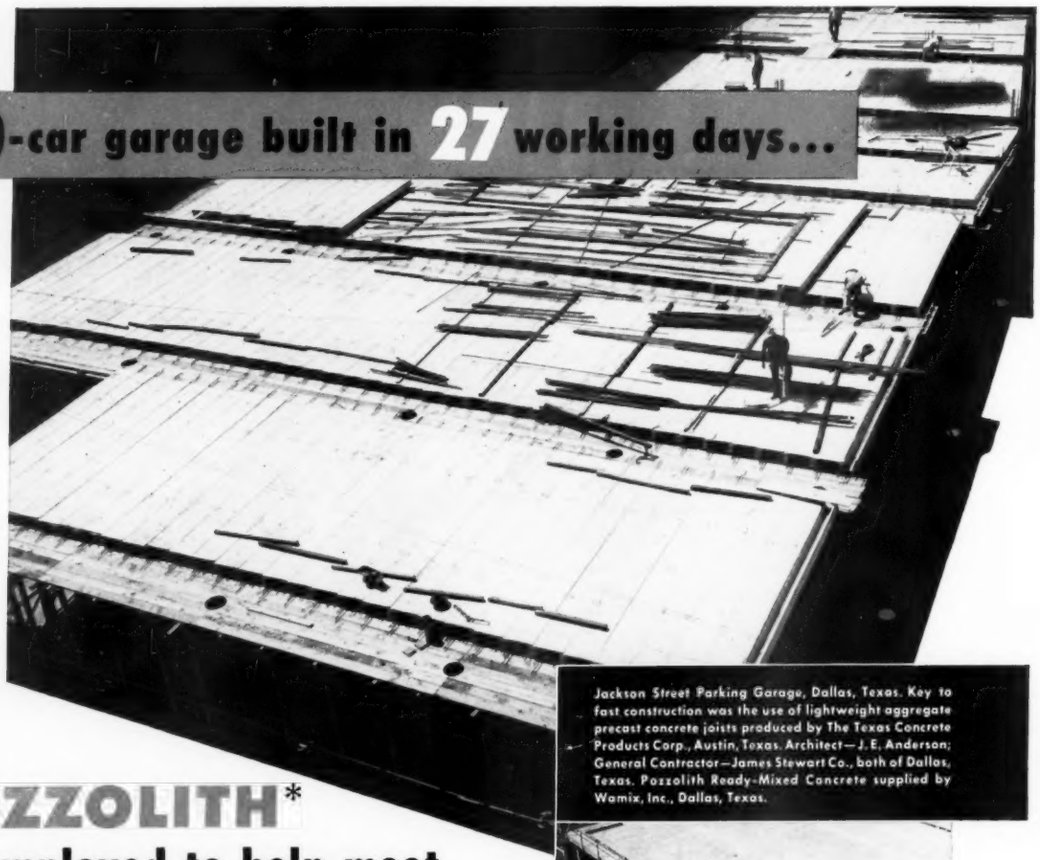
First, Pozzolith makes possible maximum reduction in *unit water content*—most important basic factor affecting concrete quality. See Bureau of Reclamation's current Concrete Manual, Page 130.

Second, Pozzolith fully complies with the water-cement ratio law—basis of ACI and ASTM procedures of design, specification and production of concrete.

Third, adaptations of Pozzolith permit rigid control of entrained air and variations in setting time.

These are the reasons for the wide acceptance and use of Pozzolith . . . last year alone in more than 13,000,000 cubic yards of concrete.

300-car garage built in 27 working days...



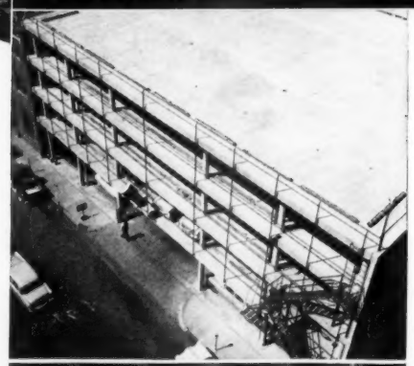
Jackson Street Parking Garage, Dallas, Texas. Key to fast construction was the use of lightweight aggregate precast concrete joists produced by The Texas Concrete Products Corp., Austin, Texas. Architect—J. E. Anderson; General Contractor—James Stewart Co., both of Dallas, Texas. Pozzolith Ready-Mixed Concrete supplied by Wamix, Inc., Dallas, Texas.

POZZOLITH* employed to help meet concrete requirements

The advantages obtained with Pozzolith in producing the two types of concrete used in this parking garage were as follows:

1. **In the *precast concrete joists*, Pozzolith permitted the design of a workable mix of *low unit water content*, thereby economically providing increased strength, reduced shrinkage, and greater bond of concrete to steel.**
2. **In the *ready-mixed concrete*, placed in slabs, columns and beams, Pozzolith was used as a retarder because of the 100 to 105° temperatures that prevailed. Pozzolith also improved workability, permitting easy placement of high slump concrete without developing segregation, plus all of the other advantages of low unit water content.**

Pozzolith will aid you in meeting *your* concrete requirements. Used in more than 25 million cubic yards of concrete since 1952.



***POZZOLITH... reduces unit water content up to 15% for a given placeability and fully complies with the water-cement ratio law. Pozzolith is produced in three standard formulations—High Early Pozzolith, Normal Pozzolith and Low Heat Pozzolith—to give the results required under varying job conditions.**

"IRON-CLAD" CONCRETE FOR HEAVY TRAFFIC AREAS

The Masterplate "iron-clad" concrete floor 4-6 times more wear-resistant than the best plain concrete floor, also corrosion-resistant, spark-safe, easy-to-clean, non-slip, non-dusting and economical. Non-colored and colored.

Section of Masterplate Floor. Note Thickness of Armored Surface

Experience in all types of plants has proved the value of Masterplate "iron-clad" concrete floors in helping to maintain a smooth flow of production, reduce maintenance expense and improve plant safety.

Only with Masterplate can a Masterplate "iron-armored" concrete floor with all its important service advantages be obtained. This is because only Masterplate contains the cement-dispersing agent calcium lignosulfonate which makes it possible to easily float a pound or more of tough, ductile metal on fresh concrete and *keep it at the surface.*

Full information on Masterplate—for new floors and resurfacing old concrete floors—and the "see-for-yourself" demonstration kit supplied on request by the manufacturer, The Master Builders Co., Cleveland 3, Ohio.

COLORED CONCRETE FLOORS FOR LIGHT TRAFFIC AREAS

Colorcron is being widely used by contractors to obtain uniformly colored, long wearing concrete floors for show rooms, churches, schools, apartments and offices; also for recreation rooms, patios, driveways, sidewalks, breezeways and garages. Floors can be scored to any desired pattern.

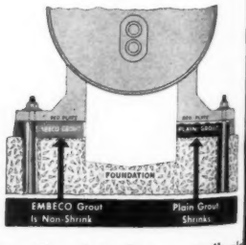
Color Plus Long Wear

Colorcron floors cost less additional than painting the floor, outwear the best plain concrete floor, and have more uniform and more intense color than is obtained from the use of pigments put in the mix. Colors: light grey, dark grey, red, brown, black, green, dark green, non-colored.

Full directions for the use of Colorcron may be obtained from the manufacturer, The Master Builders Co., Cleveland 3, Ohio.

FOR NON-SHRINK GROUTING

To avoid shrinkage—principal cause of failure in equipment grouts—plant engineers use Embeco metallic aggregate, the material that produces a non-shrink flowable grout.



Cross-section shows how an easily placeable, flowable Embeco Grout counteracts shrinkage to produce full contact with bedplate.

Following are a few of the many other uses of Embeco non-shrink mortar: grouting anchor bolts; grouting steel floor grids; grouting around pipes through walls; caulking bell and spigot pipe; patching floors, ramps and platforms.

A 16-page booklet of useful data and information on the Embeco Non-Shrink Method of Grouting may be obtained from the manufacturer, The Master Builders Co., Cleveland 3, Ohio.

The MASTER BUILDERS Co.

CLEVELAND 3, OHIO • TORONTO, ONT.

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Acceptance under Section 34.64 P. L. & R. Authorized. Vol. 51 No. 10 $4 a year 50 cents a copy

Issued Monthly by
BUTTENHEIM-DIX PUBLISHING CORPORATION
470 Fourth Ave., New York 16, N. Y.
Myron MacLeod, E. G. Allen, Jr.,
Edgar M. Buttenheim, Don Daily

CHICAGO 6, Ill., 1719 Daily News Bldg.
George S. Conover, Warner H. Robinson, Arthur B. Burgan

CLEVELAND 14, Ohio, 603 The Arcade
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LOS ANGELES 27, Calif., 2238 Ben Lomond Drive
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EDITORIAL

The User Pays?

"Make the user pay" is the currently popular theory on the financing of highways. Normally this means that those whose vehicles travel the roadway are taxed or charged a toll—sometimes both—to defray the cost of constructing and maintaining the highway. But what about the rest of the right-of-way?

The city of Minneapolis, Minn., took a very positive step recently when the City Council enacted an ordinance establishing a fee on a mileage basis for power lines on city streets. Perhaps the idea has a place in our highway system.

In Minneapolis, the primary reason for the ordinance may have been to raise more than a half million dollars annually to add to the city's income. While this reason seems justifiable on the "user pays" basis, there are other factors which might justify a similar fee for the use of our highway right-of-ways in suburban and rural areas, as well as in cities. Among these factors are: interference with automobile radio reception, potential danger to highway users from broken or low-hanging "hot" wires, danger from falling poles and wires in case of sleet and windstorms, inconvenience to maintenance crews, inconvenience to construction crews, and appearance or asthetic considerations.

Radio interference seems to depend to a large degree upon the condition of the equipment and the kind of materials used in the power line. Although actual causes of interference undoubtedly vary, it is likely that poor insulators, loose pole hardware, and overloading of wires and transformers are responsible for that annoying buzz which renders a car radio useless in the vicinity of certain power lines. These lines may be of the cross-country type, carrying power to distant cities or industries, or they may be serving only the local residents. In either case, the offensive power line is a free rider encroaching upon the rights of the road user, who is paying his way. If permits for the use of highway right-of-ways for pole lines included a stipulation that they must not cause radio interference, this nuisance to the paying highway user could be eliminated.

A considerable percentage of the money collected from highway users each year is used for highway and right-of-way maintenance and beautification. Beautiful roadsides do add to the pleasure of driving, and most of us are willing to pay our share toward the planting and upkeep of right-of-way landscaping. However, we have yet to see a pole line which added to the beauty of the road. Certainly in many cases the removal of the pole line would be an improvement. To the maintenance man who tries to cut the weeds around all the poles, their removal would be a blessing.

Not long ago newspaper articles told of two men in a truck being electrocuted when a large tank they were transporting on a semitrailer made contact with an overhead power line. Because the large tank was unable to get by a bridge on a main highway, the driver had detoured to a county road, where the accident occurred. This indicates that control of pole lines should include minimum clearance regulations and should extend to county and local roads as well as state highways. During sleet and windstorms it is not unusual to see poles and occasionally "hot" wires on the roadway. Control and licensing of pole lines could result in more substantial construction, which would provide greater safety for vehicular traffic.

Highway contractors, too, have an interest in the pole lines. It is not at all unusual on widening or reconstruction projects to find the contractor waiting to start, marking time, or jumping from place to place because the various utilities have not been moved out of his way. Naturally, this costs money in terms of higher bids, extra work orders, or loss to the contractor. In any case, the extra cost eventually gets back to the owner of the vehicles which use the road.

What can be done about it? Every governmental agency which builds, maintains, or operates highway facilities could by law be empowered to issue specific permits for the use of highway right-of-ways for any and all purposes. These permits should require a high standard of construction, a guarantee of no radio interference, assurance of prompt moving or removal in case of widening or other new construction, and a fee sufficient to cover at least the cost of issuing permits, periodic inspection of facilities, and all expenses likely to be incurred by the agency in maintaining the right-of-way around the poles or other obstructions.

Who would pay the bill? The users would. Those who use the power or other service would eventually have the cost passed on to them on their bills. What could be more fair under the theory of "user pays"?

NEWS AND VIEWS

Like a champion miler putting on a burst of speed at the last turn, 1954 is edging up on last year in both **contract** volume and **construction** activity. Expenditures for August, $3.6 billion, bettered the July peak by three per cent and last year's August total by eight per cent. If spending continues at its present rate, this year will wind up a whopping $1.25 billion ahead of 1953.

Bridges, like those on the $21,250,000 Sunshine Skyway in Florida, have helped inch the total work upwards. Opening last month, the project links St. Petersburg with the Palmetto-Bradenton area by a 15-mile chain of causeways and bridges. But with the Mackinac Straits span started recently in Michigan, bridge work should remain high.

Buildings are helping swell the volume of work, and future construction should be even better. Right now, it is estimated that plans for more **office buildings** are being worked out than at any time in the past 25 years.

Tunnel construction is adding to current work. Last month, after two years of preliminary work, men began driving the shaft of the third **Lincoln tube** under the Hudson River from New Jersey to Manhattan.

Roads, like the $133 million **West Virginia Turnpike** which will be open for its full 88-mile length next month, continue to dominate both awards and current work. Even before its opening, plans are under way to extend the pike north to connect with the Pennsylvania or Ohio turnpikes, or both.

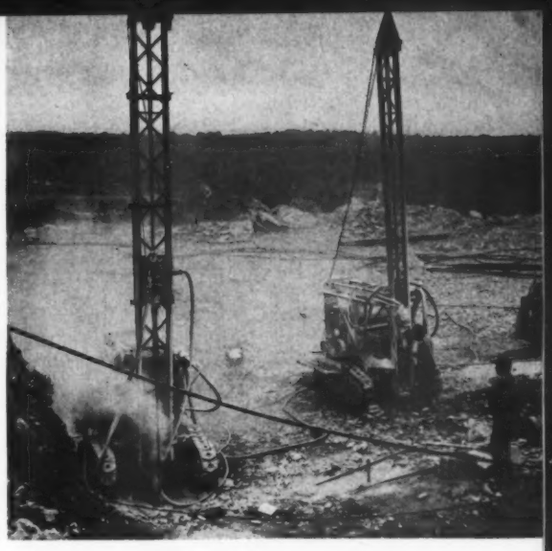
And in the next few months, bond issues totaling $500 million will be sold for **turnpike construction,** adding to the $975 million earmarked for this work so far this year.

Nor is there a lag in **free-road financing.** Governor Craig of Indiana hopes to make $18,500,000 in state and federal funds available for early work through monthly rather than quarterly distribution of state motor vehicle taxes. The plan would avoid the need for increasing the state's 4-cent gasoline tax.

But increasing such taxes is tending to be the rule, rather than the exception. At least 30 states are expected to consider increasing **road-user taxes** next year.

Two Ingersoll-Rand and two Chicago Pneumatic 600-cfm air compressors supply air for the drilling rigs through a 6-inch Naylor pipe. The rock drilling work on State Route 28 near Boston is being done by Rowe Contracting Co., Malden, Mass.

C&E Staff Photos



Blast holes 30 feet deep and 4 inches in diameter are bored through rock in less than 2 hours by the self-propelled drill rigs. The steel mast for the Ingersoll-Rand hammer is attached to the chassis of a Barber-Greene snow loader.

Converted Rig Drills 30-Foot Blasting Holes

BY REPLACING the conveyor mechanism of a Barber-Greene snow loader with a tower-mounted air hammer, an ingenious Massachusetts contractor has developed his own self-propelled blast-hole drill rig.

Rowe Contracting Co., Malden, Mass., is doing the rock drilling for M. De Matteo Construction Co., Quincy, Mass., on one of the sections of State Route 128 now being widened southwest of Boston.

Since several of the cuts were nearly 60 feet deep, Rowe decided it would be more economical to blast in two 30-foot lifts than in three or four smaller lifts. This plan, however, called for large-diameter holes at least 30 feet deep and packed with plenty of explosives. Obviously, ordinary wagon drills could not do the job.

Loader to Drill Rig

Rowe solved his problem by removing the conveyor from the chassis of the B-G loader and erecting a simple steel tower on the front. A standard Ingersoll-Rand air hammer was set up on the mast and connected to a chain feed. The only modification was in the use of a 1½-inch chuck to hold the large drill steel.

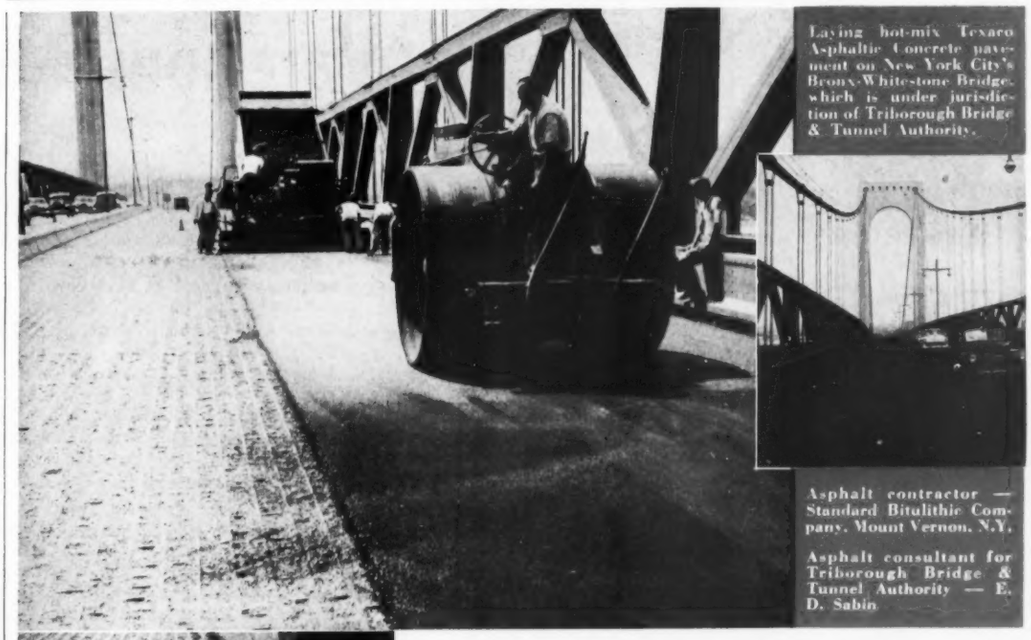
On the average, one of these rigs can drill a 4-inch-diameter blast hole 30 feet deep in less than 2 hours. Crawler mounting provides good maneuverability, even on rough ground. The tower can be folded down for moving.

Generally, holes are drilled on 11-foot centers both ways, and loaded with Hercules 60 per cent dynamite. The delay pattern depends on the type of cut.

Air is supplied by a battery of Ingersoll-Rand and Chicago Pneumatic 600-cfm compressors and is transported to the rigs through 6-inch Naylor pipes connected by Victaulic couplings.

Personnel

J. Lynch is superintendent for Rowe Contracting Co., and Dwight Moore is resident engineer for the state. The work is being done for the Massachusetts Department of Public Works, of which John A. Volpe is commissioner and H. Gordon Gray, chief engineer. The project is located in District 6 of the department, and Frank Chase is district engineer, with headquarters at Taunton. THE END



Laying hot-mix Texaco Asphaltic Concrete pavement on New York City's Bronx-Whitestone Bridge, which is under jurisdiction of Triborough Bridge & Tunnel Authority.

Asphalt contractor — Standard Bitulithic Company, Mount Vernon, N.Y.

Asphalt consultant for Triborough Bridge & Tunnel Authority — E. D. Sabin

Close-up of exposed steel grid in bridge floor and the new Texaco Asphaltic Concrete wearing surface.

Spreading seal coat of asphalt-treated stone dust while the asphalt pavement was being rolled.

Traffic will average 75,000 vehicles a day on this resilient Texaco Asphalt pavement

The Bronx-Whitestone Bridge links two of New York City's five boroughs, Bronx and Queens. More than 23,800,000 vehicles crossed the bridge last year, a daily average of 65,000, with a 24-hour peak of 114,000 cars and trucks.

During July of this year, a hot-mix Texaco Asphaltic Concrete wearing surface was constructed on this bridge. Careful planning of working hours resulted in a minimum of inconvenience to traffic. Prior to laying the new asphalt surface, the existing pavement was chipped off down to the steel grid in the bridge floor, as shown by the photos. The resilient asphaltic concrete surface was then laid to a compacted thickness of 1½ inches.

It was essential that the new pavement be opened to traffic immediately after it had been rolled. Application of a seal coat of asphalt-coated stone dust during the rolling operation eliminated any tackiness.

The answer to your own paving problem may be a heavy-duty pavement of the hot-mix Texaco Asphaltic Concrete type, or it may be one of the low-cost Texaco Asphalt surfaces designed for secondary roads and streets. Texaco Asphalt Cements, Cutback Asphalts and Slow-Curing Asphaltic Oils offer the road builder a variety of answers to the paving problem. Helpful information regarding all of these types is supplied in two booklets which you can obtain without obligation by writing our nearest office.

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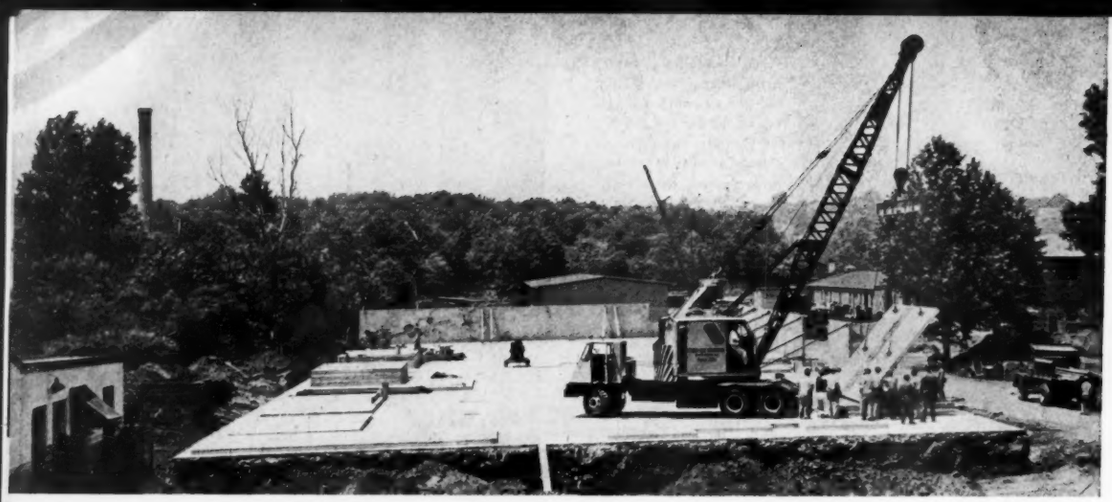
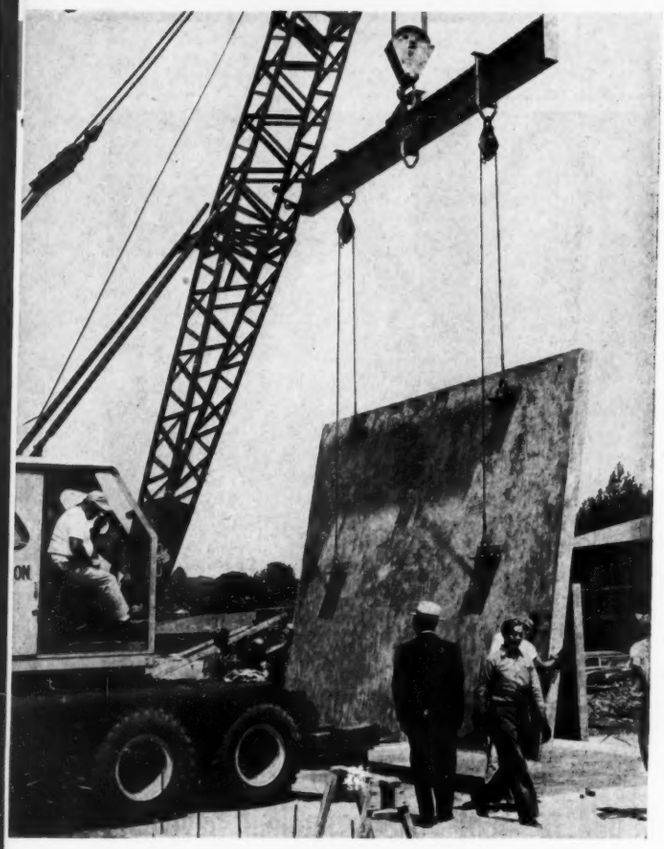
TEXACO

TEXACO ASPHALT



One of the precast-concrete panels for the warehouse is tilted into place by a truck crane. The floor of the building, poured at tailboard height to facilitate truck loading and unloading, served as a casting bed for panels. *Jim Connolly Photos*

Tilt-Up Method Encloses Warehouse in One Day



Four lifting angles, properly spaced, hold a panel at a 5-degree angle. Superior Concrete Accessories, Inc., supplying inserts, bolts, and braces for the job, worked in close cooperation with the contractor to speed construction.

TILT-UP construction—its speed, simplicity, and economy bringing it more and more into prominence—permitted a half dozen workmen and a truck crane to erect 33 precast panels and enclose a 22,000-square-foot warehouse in a period of less than 12 hours.

The warehouse is located just behind the shops of the owner-contractor, Mahony-Troast Co., Clifton, N. J. Measuring about 90 x 240 feet, the building required three 13 x 30-foot panels to span each end and twelve 13 x 20-foot panels to enclose the sides. Midway along one side of the building, one panel was omitted; this opening will be used as a bay for trucks backing into the warehouse to load or unload materials. To facilitate truck loading, the 6-inch floor slab was poured at tailboard height.

Panel Design

The 13-foot-high panels were designed so that their bottom corners rest in keys on top of concrete piers located 5 feet below the floor slab. The lower 5 feet of each panel forms a precast foundation wall; the remaining 8 feet of the panel is above the level of the warehouse floor.

The 33 panels were cast on the floor slab in four successive days. As many as four slabs were cast atop each other. To prevent the panels from bonding to the deck and to each other, Hunt Process Clear was applied to the slabs before a pour was made.

Superior pick-up inserts and dummy bolts, inserted into the panels at predetermined locations just before each pour, were set so that only a thin skin of concrete covered them on the inside face of the wall. Reinforcing dowels, used later to tie the panels to the warehouse floor, were inserted into the fresh pours and bent to lie under the skin of the concrete. This prevented them from interfering with successive pours. In a set of four panels, the top panel was left with the dowel protruding straight up.

One man stands ready to attach a brace and three others guide the panel onto the concrete piers, matching reinforcing dowels in the panel with others in the floor slab.

A small steel plate in the bottom of the key seats the panel end firmly, and a wooden wedge prevents it from floating. When panels are in place, a concrete pier is formed over the reinforcing steel behind the panel.

Seconds after the panel is erected, bolt locations are marked on the slab and holes drilled for the anchor bolts which will hold the bottom bracket of Superior braces. The threaded tube and collar allow an adjustment of 8 inches to make the panel plumb.

Workmen chip the concrete skin of the panels to remove dummy coil bolts placed before each pour.

Precision Work

When the panels were ready to be erected, the concrete skin was chipped out to expose slotted dummy coil bolts. These were backed out and replaced by regular coil bolts which clamped four lifting angles firmly in place. Angles were spaced so that each panel hung at a 5-degree angle when it was lifted. To clamp the Superior braces and hold the wall erect, two additional coil bolts were screwed into the inserts, one in each upper corner. The panels were then lowered to rest on the piers, wedged in place, and moved into a vertical position.

Since anchor bolts were not placed in the original floor slab, because of the limited amount of space available for panel casting and the movement of the truck crane, this job was done as soon as each panel was erected. With panels in place, the proper locations for floor anchor bolts were spotted, holes were drilled, anchor bolts inserted, and floor brackets secured. These brackets have a threaded tube which allows an adjustment of 4 inches in either direction to make the panel plumb. In this way, the brackets can be fastened to 2 x 4's, 4 x 4's, or other lumber, depending on job conditions. Reinforcing rods in floor and panels were temporarily held with cable clips and then welded together later.

When all the panels were secured in place, concrete piers were formed and poured to floor height behind butted edges. Backfill was then placed and compacted, and the edges of the floor slab were cast.

Glazed sash was installed atop the wall panels and a precast-concrete sill was placed for architectural effect. Only their own weight and the weight of the glazed sash will be borne by the panels; vertical steel I-beams placed on top of the piers support the entire weight of the steel-deck roof. THE END

One-Man Brush Cutter

■ A folder describing a hand-operated powered brush-cutting machine is available from Brushmaster Saw, Inc., 84 Emerald St., Keene, N. H. The Brushmaster machine, powered by a lightweight air-cooled two-cycle engine, cuts undergrowth and brush, including saplings up to 4 inches in diameter, with an 8-inch-diameter blade.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 381.

Varied Sewer Structures

■ Because all sewer problems are different and may involve many considerations, Armco has prepared a folder telling how to choose the right type of sewer structure for a given purpose. The booklet is offered to city officials, engineers, and contractors.

The diversified line of Armco corrugated sewer structures includes pipe in 8 to 96-inch diameters; pipe-arch up to 72 x 44 inches in size; Multi-Plate pipe to 180 inches in diameter; Multi-Plate pipe arch to 16 feet 7 inches x 10 feet 1 inch; and Multi-Plate arch for spans up to 30 feet.

To obtain this literature write to Armco Drainage & Metal Products, Inc., 703 Curtis St., Middletown, Ohio, or use the Request Card at page 18. Circle No. 343.

C. I. T. Representative

Lester J. LaMotte has been named representative for east central Texas by C. I. T. Corp., New York, N. Y., industrial financing firm which specializes in installment financing of construction machinery and equipment.

PROFITABLE PRODUCER FOR OMAN
on the West Virginia Turnpike

For money-making production on its contract on the West Virginia Turnpike, Oman Construction Co., Nashville, Tenn., relied heavily on rugged yellow equipment. This high-speed, high-capacity 225-HP CAT.* DW21 with No. 21 Scraper is one of the units in its line-up. Typical performance: along with another DW21 team and a D8 with No. 80 Scraper, this rig moved about 3500 yards of shale, sand and clay per 10-hour day over hauls of varying distances. Like Oman's other Caterpillar-built rigs, it worked day after day with a minimum of down time. In the background: a D8 with No. 8A Bulldozer.

What's back of the DW21's profitable performance? Among other factors, it's the *only* two-wheel earthmover designed and built by *one* company, with every part *matched* for maximum efficiency. Its capacity, speeds and power are *balanced for big production—loading, hauling, dumping.* For example, its capacity is 20 yards heaped, 15 struck. Its 2.16 m.p.h. in low gear matches push-loading speeds, and its 20.0 m.p.h. in fifth provides maximum practical off-road going. Its power is honest—225 HP at the flywheel that won't "smother" on adverse grades. Other advantages: Good visibility. A turning radius of 90°. Positive ejection that dumps even sticky materials fast. And hydraulic steering that gives the operator "feel of the road" control, an asset in tight spots and barreling along.

Another asset: Wherever a contract takes you, your nearby Caterpillar Dealer backs you up with prompt service—*on the job.* Ask him to show you performance figures on the fast-stepping, high-capacity DW21. Name the date—he'll demonstrate!

Caterpillar Tractor Co., Peoria, Ill., U. S. A.

CATERPILLAR*

*Both Cat and Caterpillar are registered trademarks—®

USE CAT EQUIPMENT FOR ON-SCHEDULE PERFORMANCE

High-Capacity Equipment Rushes Parkway Paving

Selected gravel material remaining after subbase construction is picked up by a Pettibone Mulliken Speedloader and hauled by a Ford truck to the point where shoulders are being built up. *C&E Staff Photos*

ALMOST THE ENTIRE LENGTH of New Jersey's Garden State Parkway is now open, marking the completion of the biggest blacktop paving job of the year. In a little over 8 months, five prime contractors laid approximately 2,500,000 square yards of 6-inch-thick gravel subbase, 1,500,000 square yards of 6-inch-thick plant-mixed bituminous-stabilized gravel base, and 2,500,000 square yards of 1 to 1½-inch-thick bituminous concrete surface course. The job required long hours, clever planning, and the latest in asphalt plants and paving equipment.

Parkway design calls for two divided roadways, 24 feet wide in most sections, flanked by a 10-foot shoulder along the outer edge and a 6-foot shoulder along the inner edge. The pavement slopes one per cent each way from the crown and consists of 1½ inches of blacktop on three 2-inch courses of plant-mixed bituminous-treated gravel base. Shoulders are selected gravel and slope 8 per cent. Except for the trap-rock aggregate in the surface course, all materials were obtained locally.

High Production

Most contractors worked from dawn to dusk, and some, like Lizza & Sons, Inc., Oyster Bay, Long Island, N. Y., paved virtually around the clock. Lizza operated two plants near Forked River and laid more than 3,000 tons of base a day in two 9-hour shifts.

Another contractor turning in some impressive paving records was Union Building & Construction Corp., Passaic, N. J. Working on a 21-mile section north of Atlantic City, the contractor produced 165 tons of base material per hour with a new Cedarapids automatic 6,000-pound asphalt plant. And it only required one of the new Blaw-Knox rubber-tire pavers to keep up with it.

Union Building's contract price for 21 miles of paving was $2,460,993. Unit price for the 1½-inch hot-mix top was $.90 per square yard, and for the 6-inch bituminous-stabilized base, $1.85 per square yard.

Lizza's low bid was $2,524,000 for 22 miles of paving. The hot-mix top went for $.85 per square yard and the base for $1.98 per square yard.

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Power Products engines are more compact in design — easy starting — offer sustained performance at high speeds and are easier to service than any other industrial engines. Yet they actually cost less!

If you want better acceptance — better performance for any industrial product that requires from 2 to 4 horsepower . . . switch to Power Products Lightweight!

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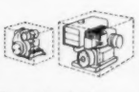
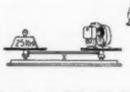


Compact—A unique design makes this engine amazingly compact. A comparison of overall dimensions shows a saving of 72% in size over the standard engine.



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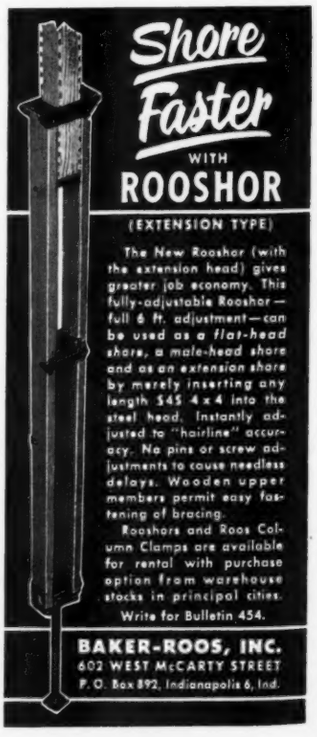

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The New Rooshor (with the extension head) gives greater job economy. This fully-adjustable Rooshor—full 6 ft. adjustment—can be used as a *flat-head shore*, a *male-head shore* and as an *extension shore* by merely inserting any length S4S 4 x 4 into the steel head. Instantly adjusted to "hairline" accuracy. No pins or screw adjustments to cause needless delays. Wooden upper members permit easy fastening of bracing.

Rooshors and Roos Column Clamps are available for rental with purchase option from warehouse stocks in principal cities.

Write for Bulletin 454.

BAKER-ROOS, INC.

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Finished shoulders, 6 inches thick and 10 feet wide, are laid by a Blaw-Knox widener after the section has been boxed out.

(Additional photos on front cover)

The bituminous-treated gravel base on Lizza's job is compacted by one of the Buffalo-Springfield 3-wheel tandem rollers.

Union Building's 6,000-pound batch-type Model G-60 plant is the largest in the Cedarapids line. Both portable and completely automatic, the plant was used to produce about 120,000 tons of bituminous-stabilized bank-run gravel and 50,000 tons of high-type bituminous concrete. Production was highest on the bituminous concrete, averaging nearly one 6,000-pound batch every minute.

The contractor set up the plant in a large gravel pit near Tuckerton. Bank-run material for the stabilized base was excavated with Allis-Chalmers scrapers and spread next to the plant so that an Allis-Chalmers HD-15 dozer could push the material into stockpiles. Gravel from several parts of the bank was brought in to provide a blend of materials that would produce the proper proportion of screened coarse and fine aggregate in the bins.

Gravel was dumped into a hopper by a Lima crane, fed to a bucket-elevator, then dropped into the dryer. A 4-unit burner heated the aggregates to the required temperature. At the end of the dryer, the hot material was transferred to a closed bucket-elevator and raised to the top of the plant. Here, a system of 48-inch x 14-foot horizontal vibrating screens separated the aggregates into three sizes and dropped them into bins. One bin contained fine aggregate passing the No. 6 screen, the second held coarse aggregate retained in the No. 6 sieve and passing the ⅜-inch screen, and the third contained coarse aggregate passing the 1¼-inch screen. Oversize material was rejected through a special chute.

A typical 6,000-pound batch required 3,185 pounds of sand, 1,055 pounds of No. 1 coarse aggregate, 1,515 pounds of No. 2 coarse aggregate, and 300 pounds of 85 to 100-penetration asphalt.

Automatic Operation

The key to the plant's high production was its fully automatic operation. An electronically controlled time and sequence locking system opened and closed bitumen and aggregate batcher gates, controlled mixing time, and discharged the mix. At all times, the operator had an unobstructed view of the signal-light

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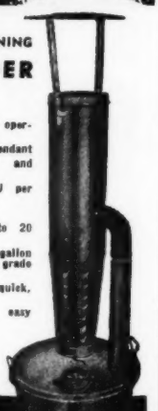

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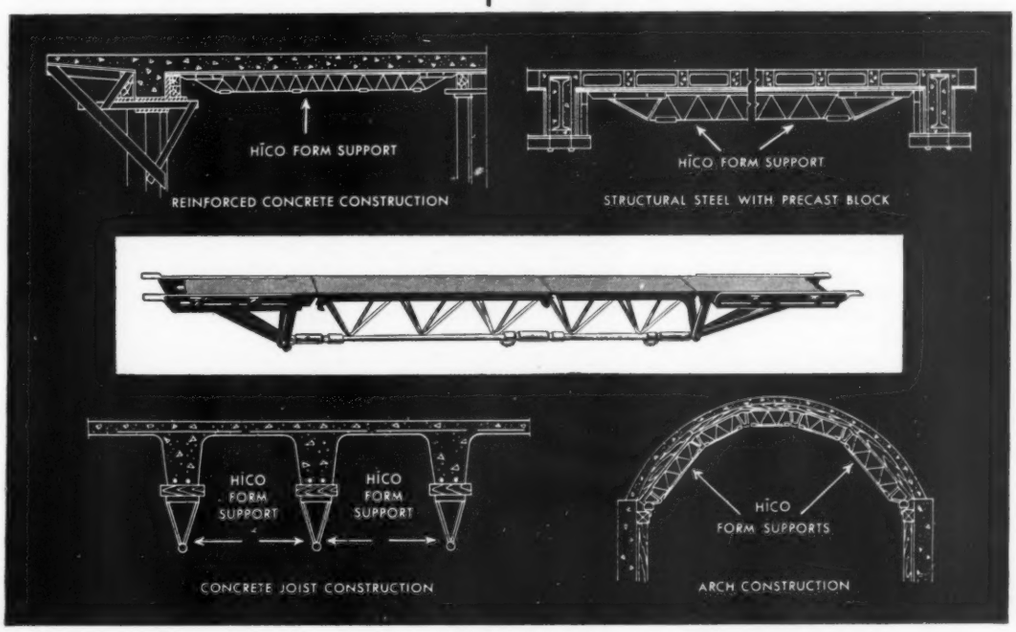

new horizontal form supports cut shoring costs up to 40%

Adaptability is one of the main reasons why HICO steel form supports save money. Each support is composed of sections of varying lengths. Special end pieces assure adaptability to all types of vertical supports. Using combinations of these components, complete horizontal supports in a variety of lengths up to 27 feet may be assembled in minutes. As a result, the same basic HICO sections can be used again and again on a wide range of construction projects. Other advantages are listed below.

TIME SAVING
Can be erected and stripped in ⅓ the time needed for ordinary form supports. No special tools needed. HICO steel supports are delivered completely assembled and tagged to show exact locations according to plans. Because no vertical center supports are needed, work can continue on floor below, cutting over-all construction time.

LOW COST
Savings in construction time naturally cut construction costs. In addition, reuse factor permits amortization of initial costs over many jobs.

LIGHTNESS
Weigh 8⅓ lbs. per foot, any section easily carried.

DEFLECTION COMPENSATION
Tightening of special turnbuckle device at bottom of span controls camber of span which compensates for deflection due to slab weight; assures even, level surfaces.

EFFICIENCY
No center supports needed. Engineering design assures tremendous strength and exceptionally high resistance to buckling.

STRENGTH
Carries forms and concrete on clear spans up to 27 feet.

DURABILITY
Each HICO section may be reused 100 times or more.

HICO FORM SUPPORTS may be purchased outright or leased with an option to buy. If leased, rental may be applied against purchase price. HICO engineers will be happy to consult with you concerning your particular requirements. In addition they will furnish detailed layout plans showing number and type of HICO form supports required and, if desired, will work with contractor at job site to familiarize him with all phases of the product.

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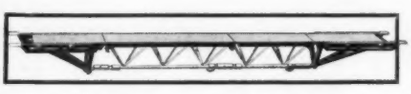

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panel, scales, and discharge gates.

The 85 to 100-penetration asphalt was trucked in from an Esso Standard Oil Co. plant and transferred to two 20,000-gallon storage tanks. A hot-oil heating system, made by Hy-Way Machinery, Inc., kept the asphalt at the required temperature through a system of coils that jacketed the tanks. Hot asphalt was brought to the mixer or recirculated back to the tanks when not needed by a Kinney pump.

The mix was hauled to the road by a fleet of 25-ton-capacity dump trucks and laid in 2-inch lifts with the new Blaw-Knox paver. Rubber-tire mounting permitted the machine to travel up to 55 feet per minute while laying 180 tons per hour. Two Buffalo-Springfield rollers followed the paver as closely as possible.

Continuous-Mix Plants

Lizza & Sons, Inc., which had a 21-mile stretch just north of Union Building's job, mixed all base-course material in two Barber-Greene continuous-mix plants. One plant processed straight bank-run gravel which was used only on the lower two lifts. A higher quality material for the top 2 inches of the base was made in a second plant equipped with a gradation control unit. Together, the plants turned out nearly 200 tons per hour.

The two units were set up side by side in a gravel pit just off the parkway. A Lorain shovel loaded bank-run material into trucks, which dumped into grizzlies. The material was picked up by bucket elevators, dried, and conveyed through the pugmills.

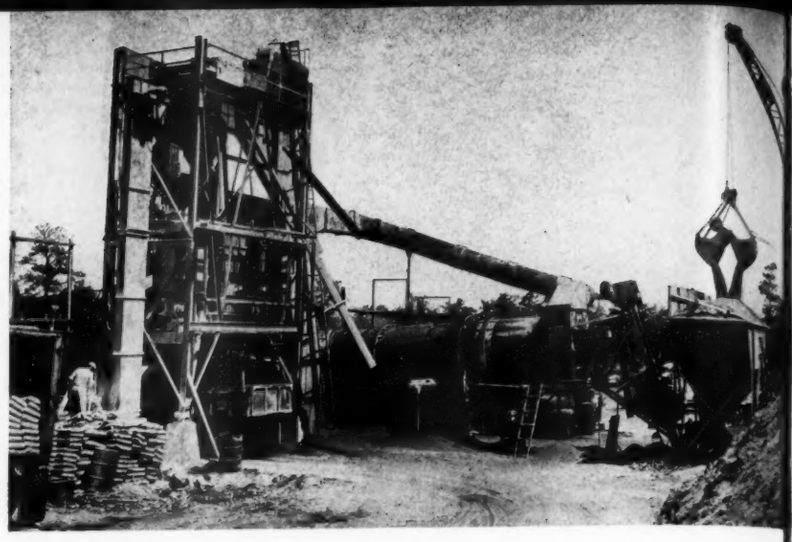
One plant was powered by International diesel engines and the other, with Buda diesels. Heavy No. 5 fuel oil was pumped cold to the dryers and burned with Hauck units. Steam for heating the jacketed asphalt-storage tanks was supplied by a Cleaver-Brooks 135-hp boiler and a Kewanee 100-hp boiler. Asphalt supplied by American Bitumuls & Asphalt Co. was transferred to surge hoppers by a Viking pump and then to the pugmills by a Kinney metering pump.

The mix was hauled by a fleet of trucks to two Barber-Greene pavers, one laying the two bottom courses of the base and the other laying the top. Most of the compacting was done with Buffalo-Springfield 3-wheel tandem rollers.

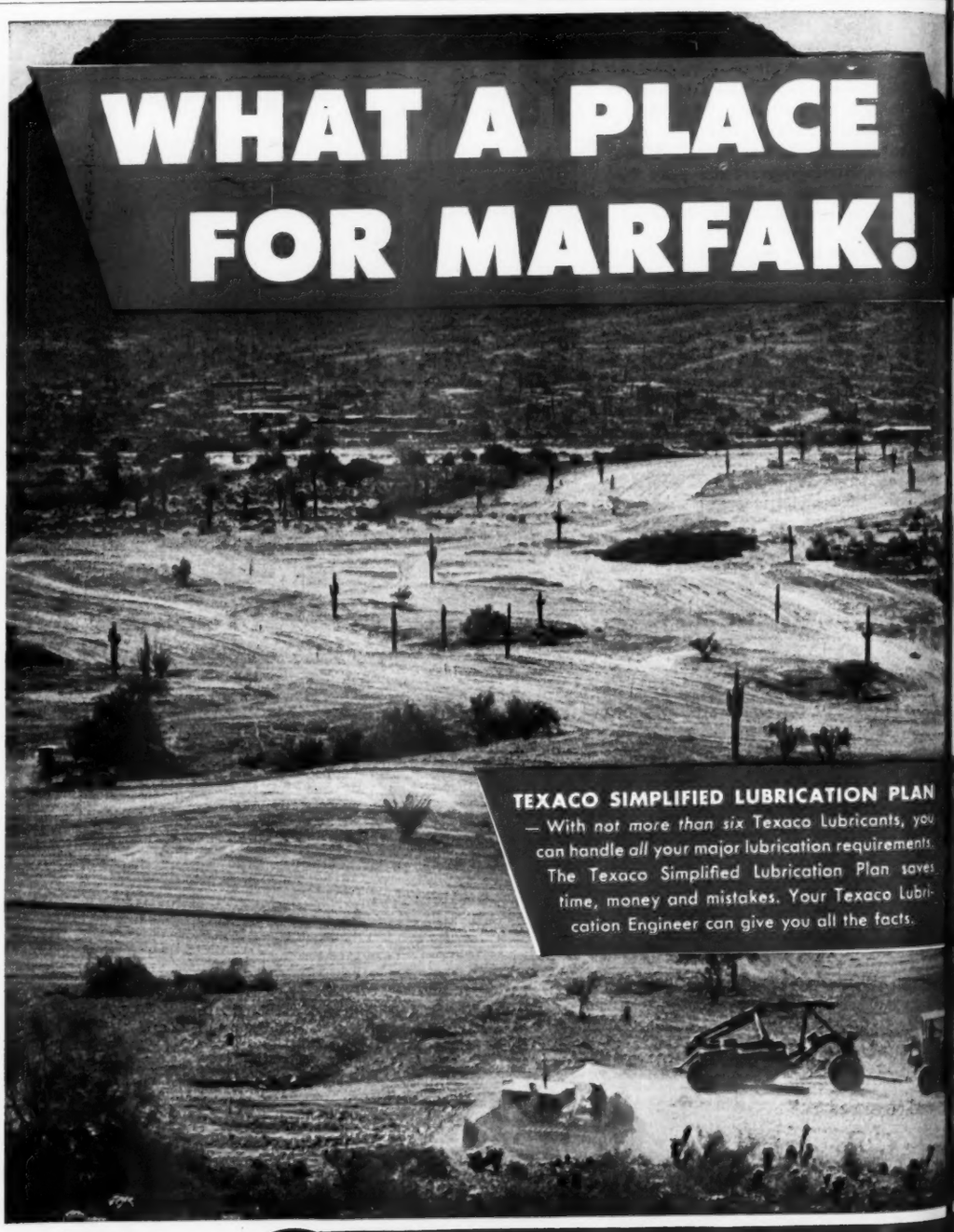
Night Work

For Lizza's night operations, the plant was illuminated by flood lamps powered by a Cummins diesel-electric set. Each Barber-Greene paver was equipped with a Winco 2,000-watt generating set that supplied power for four lamps on the back of the paver, two on the front, two on the hopper, and four on a high stanchion. Rollers used two lights front and back powered by the battery. Day and night production records were similar.

Lizza subcontracted the job of producing and laying the 1½-inch bituminous-concrete surface course to South Jersey Construction Co. The contractor mixed the 60,000 tons in his new Cedarapids E 4,000-pound permanent plant at Tuckerton. The all-electric unit produced high quality blacktop at the rate of 120 tons per hour. Most of the accessory



Another Cedarapids plant (in addition to the one shown on the front cover) turns out surface-course material for the Lizza & Sons contract on the parkway.
C&E Staff Photos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CONTRACTORS AND ENGINEERS

equipment was similar to that on the automatic plant used by Union Building. Fine aggregates were trucked in from local pits, and trap-rock coarse aggregate was hauled about 70 miles from Kingston, N. J.

Subbase and Shoulders

Selected gravel for the 6-inch subbase was obtained from a number of local pits and placed by Jersey spreaders mounted on the dozer arms of International TD-24 tractors. Production averaged between 2,000 and 2,500 yards a day. Pneumatic-tire rollers compacted the material.

Shoulders on Lizza's job were made by first removing the excess subbase material which had been carried out beyond the pavement. This selected material was picked up by a Pettibone Mulliken Speedloader conveyed to trucks riding next to the loader on the pavement, and hauled to the points where shoulders were being finished. Here, after a Caterpillar No. 12 motor grader had boxed out the required section, a Blaw-Knox widener laid the selected material. In a good day, the widener laid 2½ miles of 6-foot-wide shoulder.

Personnel

General superintendents were Tommy Knowles for Union Building & Construction Co.; J. W. Slawson, Jr., for Lizza & Sons, Inc., and E. Parker for South Jersey Construction Co.

James Hoban was resident engineer, and Norman L. Fetterhoff was assistant resident engineer in charge of night operations for Brown, Blauvelt, & McFarland, Inc., section engineers. Ralph Stelljes was district engineer for the New Jersey Highway Authority, which is headed by Harold W. Giffin, chief engineer. Parsons, Brinckerhoff, Hall, & Macdonald, New York, N. Y., are the general consultants to the New Jersey Highway Authority. THE END

Clark Leasing Corp. To Rent Michigan Units

Under a new program, Clark Leasing Corp., a subsidiary of Clark Equipment Co., Buchanan, Mich., permits contractors to lease, with or without option to purchase, any unit in the line of Michigan power cranes and shovels manufactured by the company's Construction Machinery Division.

The plan has been designed so that contractors may keep working capital needed for materials, payrolls, or other purposes, yet at the same time have the use of equipment needed to do required jobs. Making monthly lease payments eliminates the need for accumulating large amounts of capital before new equipment can be ordered and put to work.

Provisions permit the customer to lease equipment for a three or five-year period at an annual simple interest rate of 3.79 per cent of the cost of the unit. The interest varies depending upon the length of the lease, and on whether the contract is straight lease, or a lease with an option to purchase. This interest is added to the cash cost of the unit, cost of extra attachments, and freight, if any. This total cost is then broken down into annual payments, which are payable in 12 monthly installments. For instance, under a three-year lease, 50 per cent of the total is payable in the first year, 30 per cent in the second, and 20 per cent in the third.

The terms of the lease make the customer responsible for maintenance, insurance, and operational costs. The leasing corporation is the owner and lessor of the equipment, and it provides the necessary financing. All the details of the lease are set up by the Michigan distributor in the customer's vicinity, which also provides service for the machine. The option to purchase the equipment can be secured by the customer at the time the lease is made or at the end of the rental term. Also included in the lease is an option permitting the customer to extend the lease indefinitely at a low cost. New units can also be secured under the plan with a trade-in allowance on a Michigan unit credited to the lease.

Reinforced Tarpaulins Protect Equipment

■ Water and mildew-resistant tarpaulins are illustrated in a leaflet from the Burch Mfg. Co., Inc., Fort Dodge, Iowa. Burch Weather-Tite tarpaulins are used as covers for trucks, trailers, machines, and materials, and also serve as windbreakers in building construction.

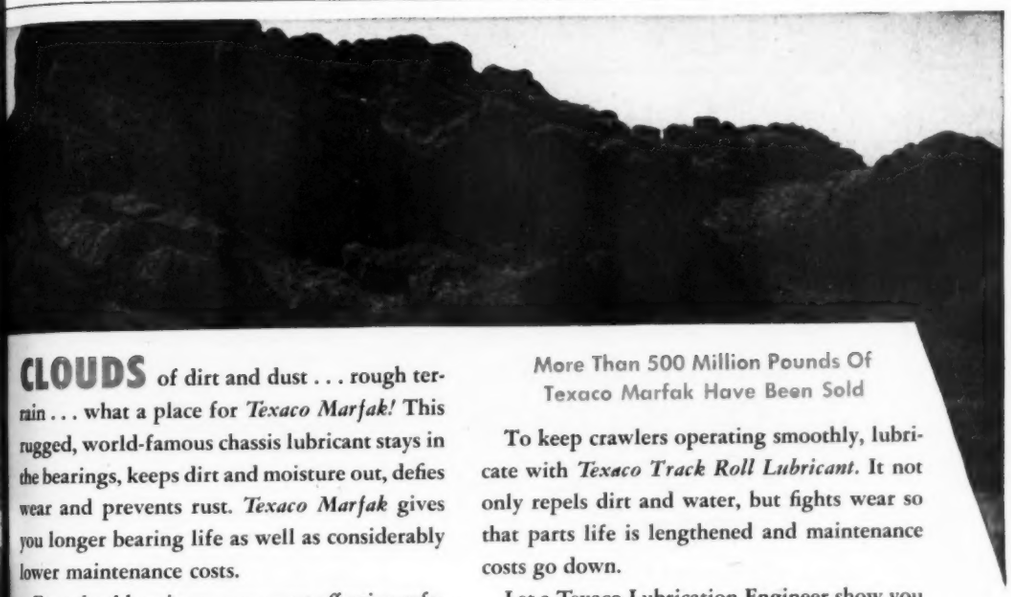
The tarpaulins, offered in olive drab and green, have double lock-stitched seams, reinforced corners, and sides hemmed with reinforced grommets every 3 feet. Sizes available range from 6 x 8 feet to 21 x 21 feet cut size, in 10 to 18-ounce duck. There are also larger sizes and customer sizes in all weights. Flame-resistant material is available at extra cost.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 455.

Hoisting Sling Adjusts Weight of Uneven Loads

■ A self-adjusting hoisting sling for handling unbalanced and hard-to-get-hold-of loads is described in a folder from The Caldwell Co., 1830 Camp Ave., Rockford, Ill. As the tension of the lift increases, the legs of the Adjust-A-Leg equalizing sling automatically adjust themselves and lock in position frictionally, so that the load is raised level.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 442.



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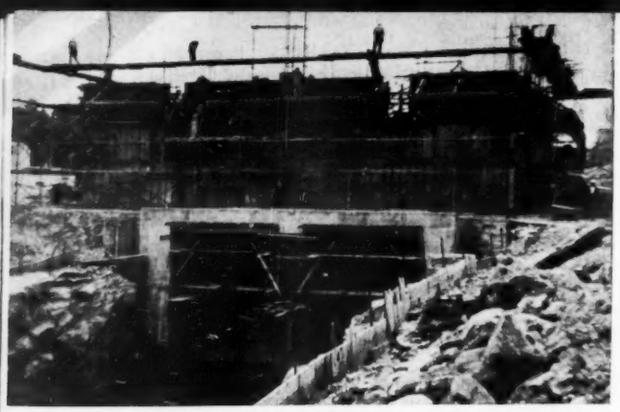


A view of the partially constructed powerhouse for the Five Falls Dam, being built on the Racquette River in upstate New York. Note the boards placed around the edge of the pit to prevent loose rock from rolling over the embankment.

Accident Prevention Is My Line

By JAMES E. WINCHELL, Safety Engineer, Employers Mutuals of Wausau, Wis.

I'M A SAFETY ENGINEER. Every working day of my life I see men risking their lives—for no reason except that they haven't been told how to work safely. I've watched men building highways, office buildings, hospitals, dams, and tunnels. And I've seen them all make mistakes.

I've seen a man drown because he didn't bother to wear a life preserver on a cofferdam job. I've seen a man suffer a fractured skull because he left his hard hat at home. I've seen a man lose the sight of an eye because he thought safety goggles were too heavy and uncomfortable to wear.

There's a brighter side to my job, though. I've seen projects where safety has become the watchword of the day, where men went out of their way to protect themselves and each other, where foremen were constantly talking, pleading, even badgering their men into safe work habits. These things make me feel something of a success. Because it's my job to sell safety.

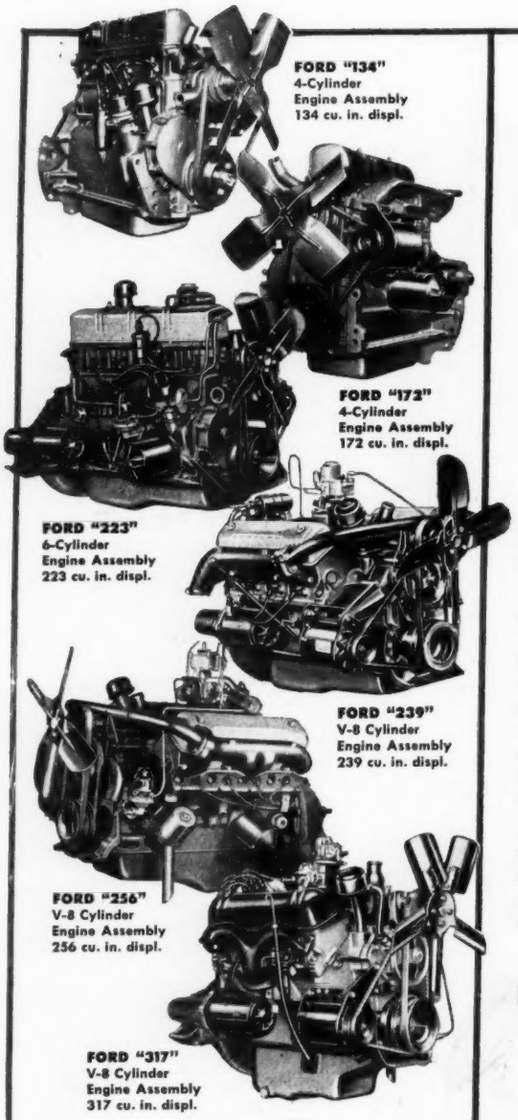
Right now I'm doing this for Employers Mutuals of Wausau, the holder of the compensation insurance on an important construction project in upstate New York. The job involves the building of a series of five dams along the Racquette River. The customer is the Niagara-Mohawk Power Corp., Troy, N. Y., and the contractor, the Racquette River Construction Corp.

The contractor had been engaged to build five power stations as well as the dams. Accident frequency, while not much in excess of the industry average, was running higher than the customer wanted. Accident severity was an item of major concern.

The company surveyed the operations and announced its conclusions: It could offer effective help in the control of accidents if it had the assurance that the contractor would act upon suggestions. The company got the assurance and the job. From there on, helping the policyholder stamp out accidents at Racquette River was my assignment.

Three Danger Spots

On my first trip to the project I discovered that there were three immediate areas which would require close attention. The first was the site of a dam project at South Colton; another was the scene of activities in and around the Huggard gravel pit, also at South Colton, a busy spot where cranes, trucks, and other heavy equipment would soon be engaged in around-the-clock activity. The third was the site of dam construction at Five Falls, a few miles up the river from South Colton.



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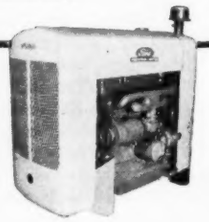

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A safety engineer describes his job of selling safe working conditions to contractors and their crews

James E. Winchell (left), safety engineer for Employers Mutuals of Wausau, Wis., makes a safety suggestion to Neil Stone, superintendent on the Rainbow Falls Dam project. Hard hats are standard uniform on the job.

Rock blasting and excavation were the major activities at South Colton when I first visited the site. An area just below the site of the dam was being cleared for the eventual building of the power house. A road was being pushed through near Rainbow Falls—more rock blasting and excavation.

I presented an Accident Prevention Plan, tailor-made for the project, to officials of Niagara-Mohawk and the Racquette River Construction Corp. These were safety measures outlining the various responsibilities of key personnel and making general recommendations as to the safety procedures that should be followed through the life of the project.

Aside from the general plan, I suggested that temporary barricades be provided around the grease pit in the garage and that a tool grinder employed at South Colton be provided with good (not merely adequate) eye protection. I also urged his foreman to be sure that once this protection was provided, it be worn always during operations.

On our tour around the area of the gravel pit I noticed a man riding a crane hook. I told the superintendent that this should be absolutely forbidden, and he assured me that he would take the necessary steps to insure that it would not happen again.

On my next trip to South Colton, I decided to give the garage a careful examination. Out of this survey came two major safety recommendations:

1. Larger welding screens should be provided at once. The eye flash burn potential is extremely serious the way things are now.

2. Flexible pipe exhaust extensions should be provided for all gasoline-powered engines in this enclosed area. Electric welders and concrete mixers were noticed running in the confined area, and this makes a very serious exposure to carbon monoxide gas.

What I saw when I returned to South Colton in February was heartening. The new welding screens were in place, the carbon monoxide exposure had been eliminated, the tool grinder was wearing safety goggles, and the barricade had been provided around the grease pit. I knew then that we were getting the gospel of safety across. And that made me want to work all the harder on the project. For when the customer takes prompt and positive action on our suggestions, we want to give him the very best we have to offer.

By the end of March, things were really beginning to hum at South

(Continued on next page)

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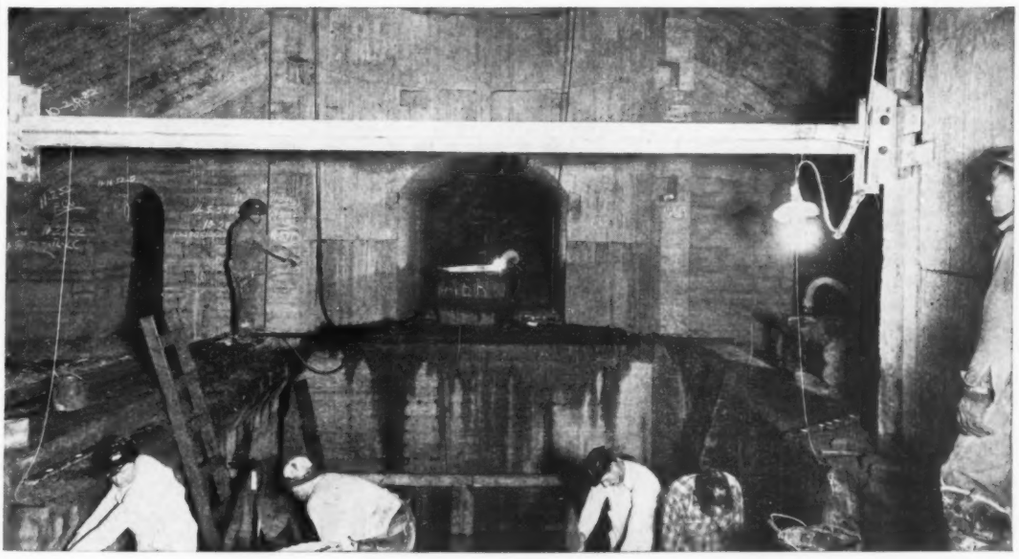
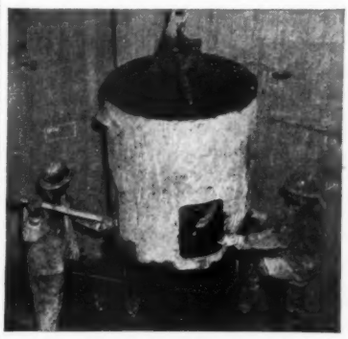


Concrete shaft lining at Bowlby Shaft, No. 2 Mine Butts, Robena Mine, Greene County, Pa. Contractor: R. G. Johnson Company, Washington, Pa. Forms are removed in the sump and bottom arches.

Contractor Counts on Duraplastic* For Better Results in Mine Shaft Linings



Pouring the last of the concrete into a 6" pipe to fill bottom arches at Bowlby Shaft.

"We've used Atlas Duraplastic in a large number of shafts and have always had excellent results," says C. H. Dorsey, president and treasurer of the R. G. Johnson Co., Washington, Pa. "Duraplastic helps us overcome the water hazard of shaft sinking. We've found that it gives shafts longer life."

Contractors prefer Duraplastic air-entraining portland cement for general concrete work because it gives concrete superior workability, greater plasticity. This makes placement easier. Work progresses smoothly and rapidly . . . often means savings in both time and money.

Duraplastic minimizes bleeding, or water gain, and segregation . . . fortifies concrete against the effects of freezing-thawing weather. Mixes are more cohesive, more uniform . . . less mixing water is needed for a given slump. And concrete made with Duraplastic offers increased resistance to water penetration. No wonder so many contractors are specifying Duraplastic for all their construction jobs.

YET DURAPLASTIC COSTS NO MORE! It sells at the same price as regular cement and requires no unusual changes in procedure. Complies with ASTM and Federal Specifications. For descriptive booklet, write Universal Atlas Cement Company (United States Steel Corporation Subsidiary), 100 Park Avenue, New York 17, N. Y.

OFFICES: *Albany, Birmingham, Boston, Chicago, Dayton, Kansas City, Minneapolis, New York, Philadelphia, Pittsburgh, St. Louis, Waco.*

**"Duraplastic" is the registered trade-mark of the air-entraining portland cement manufactured by Universal Atlas Cement Company.*

ATLAS® **DURAPLASTIC**
AIR-ENTRAINING PORTLAND CEMENT

CE-D-102

Makes Better Concrete at No Extra Cost

UNITED STATES STEEL HOUR — Televised alternate weeks — See your newspaper for time and station.

(Continued from preceding page)

Colton and also at nearby Five Falls. In all, more than 250 men were on the job. That meant 250 reasons for me to be on the alert.

At Five Falls, I stressed the importance of keeping accurate job accident records and of notifying the insurance carrier as soon as possible after an accident. General safety conditions appeared to be good, although I did suggest that debris and waste be removed from around the entrances to the construction shanties and from any other areas where there was a danger of tripping and falling. I noted, with no small amount of satisfaction, that a group of men were policing the area when I left.

Hard Hats a Must

About this time, I began to push for a 100 per cent hard hat program on all projects at Racquette River. There were plenty of these hats in evidence as I made my inspection tour, but not everyone was wearing one. When I'm working a construction job—particularly one involving blasting, rock hauling, road building, and the like—I don't rest until every man on the job has a hard hat and wears it every minute of his shift. I know this type of protection isn't a 100 per cent guarantee against a head injury, but I could tell many a story about construction men who are on the job today because they wore a hard hat at a crucial moment. I know some widows, too, of men who forgot—or were never told—about hard hats. The superintendent—as safety-minded a boss as I've ever met—assured me he would follow up on the hard hat program.

At the Huggard gravel pit, most of my recommendations had to do with the hazards of poor sloping, machine guarding, electrical grounding, and vehicle operation. Two suggestions I regarded as particularly important.

One was that truck drivers dismount and face shovel-loading operations on all jobs. On one or two occasions, I had noticed rocks and boulders being dumped into trucks while the driver remained in the cab. The possibility of disastrous results in such a procedure was obvious. I was assured that the drivers would be trained to follow these instructions.

The second recommendation was to alert everyone on the job to the necessity of knocking down any overhangs which might develop at the rim of the pit. To allow these to exist would have been an open invitation to tragedy. All the hard hats in the world won't help a man who's been buried alive.

I pointed out that the slope in the pit should be constantly watched and never allowed to exceed an angle of 60 degrees from the horizontal.

At the Five Falls project, I noted the need for better eye protection for the tool bit grinder, and also suggested that the grinding machine be provided with a stop bar in order to prevent hand contact with the wheel. At South Colton, I again pushed for the hard hat program, and at the same time alerted supervisory personnel to constantly check the saw operator in the carpentry shop. I had noticed that he rarely had his face shield in proper position. If he didn't care about his eyes, I did.

By now, the program was pretty well installed. And the men at the top—officials of both the power company and the contracting firm—were lending full support. Without this, no safety program could ever get to first base.

My job now became one of reminding rather than of educating. But I also had to be on the alert to spot any new developments in the project which might create new safety problems.

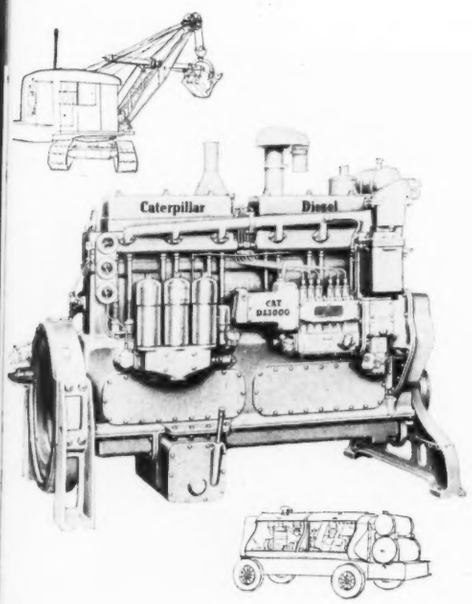
During the summer, I noticed that some of the men were falling into the dangerous habit of jumping from fairly high elevations. There are two dangers in such a practice—a man may break an ankle, or he may lose his balance and tumble down the side of a hill. This danger was particularly apparent in the operations around the gravel pit. The practice was strictly forbidden from that time on.

Tips for Truck Drivers

At one time I cautioned the supervisor of the truck drivers about speed and also warned about making the run from the paver to the batch plant at Five Falls with the truck dump bodies elevated. A rear-view mirror doesn't do much good when the body of a dump truck is up.

The men had got to the point where a suggestion was sufficient. That was the important thing. The supervisors and their men were thinking safety. When the crews are in that frame of mind, my job gets a lot easier.

When I last visited the Racquette River project, the hard hat program was enforced 100 per cent. Truck drivers, who were driving a lot slower, were always getting out of



Announcing the

NEW 190-HP CAT* D13000 ENGINE

CATERPILLAR ADVANCED DESIGN FEATURES IN THE NEW D13000

While retaining such time-proved features as aluminum alloy main and connecting rod bearings, "Hi-Electro" hardened and Superfinished bearing surfaces, exclusive Caterpillar fuel injection system, ability to use low-cost No. 2 furnace oil without fouling, etc., the new D13000 incorporates many new features, among them:

NEW Valves, Inserts, Rotators—new components, standard in the breathing system, combine increased breathing ability with longer valve life—make possible additional horsepower output and lower maintenance costs.

NEW Vibration Damper—sturdy, metal-enclosed, fastened directly to front of crankshaft. Keeps unit vibration-free at higher speeds. Optional in installations where engine speed is kept below 1000 r.p.m.

NEW Camshaft—improved high lift cam profiles give smooth valve seating and increased breathing ability. This increased capacity, also made possible by new oil-bath air cleaner and larger intake and exhaust manifolds, insures low exhaust temperatures and adequate reserve power.

NEW Water Pump—larger, with a greatly increased capacity to answer cooling needs of this modern, high-powered diesel.

NEW Pistons—oil-cooled, made of high-strength, lightweight aluminum alloy with stainless-steel heat plugs in the high-temperature zone and cast-in iron bands for the top ring groove to give best service at lowest final cost.

NEW Oil Pump—features not just one, but two pressure controls to assure correct lubrication for all moving parts from the first turn of the crankshaft.

For complete details, specifications, attachments, etc., see your nearby Caterpillar Dealer

...yours for greater power, production, profits!

For years, working in all kinds of construction equipment, conditions and jobs, the Caterpillar D13000 Engine has proved itself a big money-maker for power users. Now, here's a new D13000, designed and built to bring you even greater power, production and profits!

In the new D13000, you get 21% more brake horsepower. Its governed speed, raised to 1200 r.p.m., provides greater versatility and productive capacity. While keeping outstanding, time-tested parts, it adds advanced design features to set new standards of stamina, dependability, economy and long life. And its wide variety of matched accessories and attachments makes it readily adaptable for any need.

For jobs requiring power in the 145 (continuous) to 190 (intermittent) horsepower range, your best buy is this rugged new Cat D13000 Engine. Leading manufacturers of excavators, crushers, compressors and other heavy-duty machinery can furnish it in their equipment. Get the *complete* facts about it today from your nearby Caterpillar Dealer.

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

CATERPILLAR*

*Both Cat and Caterpillar are registered trademarks—®

D13000—A NEW STANDARD OF DIESEL POWER

their cabs and facing the loading operation. Dust collectors were in evidence whenever they were needed. The men in the shop were wearing their safety goggles.

My job isn't done, however. It won't be for a couple of years. This is a big project involving the spending of almost $26 million. But the pattern is set.

What has all this meant to Niagara-Mohawk Power Corp. and the Racquette River Construction Corp.? Well, the last report from my home office in Wausau, Wis., indicated that accident frequency—and severity— were both well below the industry average. Some day this will mean reduced compensation premiums for this project—and better cash dividends, too.

Even more important than the dollars and cents angle is the fact that these men, whom I have come to know so well in the last year, are pretty sure of being around for another project another day. That's what is most important to me.

THE END

Piling Used in Detroit

To the Editor:

CONTRACTORS AND ENGINEERS

The second paragraph of "Composite Pipe Piles Are Driven at Plant Site", in the August issue of CONTRACTORS AND ENGINEERS, states in part that the automobile plant job saw the first use of pile shell and composite pipe piling in the Detroit area.

You will be interested to know that in 1929, our Mr. L. G. Finlay applied for a patent on composite pipe shell piles, which was granted and assigned to the Raymond Concrete Pile Co. Since that time, the Raymond Concrete Pile Co. has driven many thousands of pipe shell composite piles for the foundations of many structures in the Ford Motor plant and numerous other buildings in and around Detroit.

Very truly yours,
D. W. Moss,
Raymond Concrete Pile Co.
New York, N. Y.

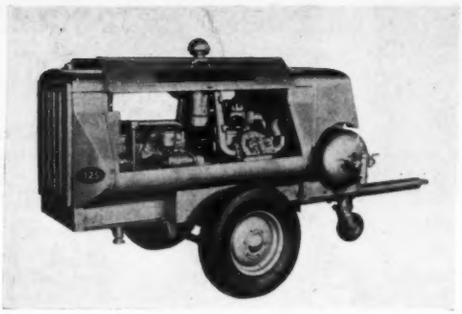
Literature on Equipment For Welding and Cutting

■ A new catalog that describes all Airco light welding and cutting equipment is offered by Air Reduction Sales Co., 60 E. 42nd St., New York 17, N. Y. This catalog covers Airco gases; welding and cutting equipment; and accessories, including torches, regulators, and electrodes. It also describes three of the company's latest developments: Aircospot (inert-gas spot welding), Easyarc 12 electrode, and the new heavy-duty cutting attachments for Airco torches.

To obtain Catalog ADC 662B write to the company, or use the Request Card at page 18. Circle No. 434.

Spencer Mfg. Co. Names Leon Fisk Sales Manager

New sales manager of the Spencer Mfg. Co. of Ohio, Cleveland, is Leon W. Fisk. He will direct the sale and distribution of the company's axles and drive shafts manufactured for earthmoving equipment. His headquarters will be in the executive offices at Cleveland.



The new Gardner-Denver 125 cfm portable compressor.

Portable Compressor Delivers 125 CFM

■ A new two-wheeled portable compressor with a capacity of 125 cubic feet per minute, suitable for use on small construction jobs and street repairs, has been announced recently by the Gardner-Denver Co., S. Front St., Quincy, Ill.

The Model WH-125 has a 2-stage water-cooled compressor driven by either a gasoline or diesel industrial-type engine operating at moderate speed. The W-type compressor is similar in design to compressors used on other Gardner-Denver portables of all sizes.

For further information write to the company, or use the Request Card at page 18. Circle No. 353.

Calcium Chloride Pellets

■ Pellet-type calcium chloride is covered in detail in a manual from the Dow Chemical Co., Midland, Mich. The publication explains that Peladow pellets permit the transportation, storage, and mechanical handling of calcium chloride in bulk, and points out the significance of the bulk factor from the standpoints of lower costs and easier application.

To obtain this literature write to the company, or use the Request Card that is bound in at page 18. Circle No. 394.

How Many of These...

11 Attachments to the *Pit-Bull* FIT INTO YOUR OPERATION?

Do you find something that you need? Chances are there are several. Maybe it's a machine that you have needed on occasional jobs, but you called in custom operators rather than invest in high-priced equipment.

Now, with the Davis *Pit-Bull* you can AFFORD your own! Why? Because the *Pit-Bull* is a high-quality unit with ELEVEN different attachment for low-cost versatility. You buy only the attachments you need without investing in a new power unit for each one.

Notice how all the attachments fit the same basic unit. They can be changed from one to the other in a matter of minutes. You save on labor costs, too, by letting one man and the *Pit-Bull* do a variety of work without having costly equipment sitting idle.

There's no sacrifice in performance either. The *Pit-Bull* converts your Ford or Ferguson tractor into a powerful industrial machine. Installation of syncro-mesh reversing transmission gives you greater maneuverability with four speeds in each direction, plus extra power for digging and loading. Reversal of the seating and steering controls lets you sit comfortably right over your work so you can see exactly what you're doing.

The Davis *Pit-Bull* is guaranteed to outperform conventional equipment pound for pound, dollar for dollar!

Check This List of Attachments:

1. Loader with or without Scarifier
2. Back-Hoe
3. Trencher
4. Rotary Broom
5. Swinging Crane
6. Lift Fork
7. Roller
8. Post Auger
9. Dozer
10. Hammer
11. Rotary Mower

Ask for a Demonstration!

Write for this Brochure On the Davis Pit-Bull and Ask for the Name of Your Nearest Dealer

MID-WESTERN INDUSTRIES, INC.

1009 SOUTH WEST STREET Dept. B WICHITA, KANSAS

The Davis Pit-Bull Is Manufactured by the Makers of the Davis Loader, America's Quality Front-End Tractor Loader!

PB-5

The new Euclid TD-12 tractor has three functions. Here it push-loads a scraper . . .

Euclid Introduces New Crawler Tractor

Twin GM diesel engines on the TC-12 develop 380 hp; each has separate transmission and torque converter

■ The construction industry got a new entry in the crawler tractor market when the Euclid Division of General Motors unveiled its Model TC-12, a big twin-engine track-type tractor of revolutionary design. This first unit of a projected line of tractors was demonstrated on September 15 at GM's Proving Ground, Milford, Mich., before 450 Euclid dealers, domestic and foreign, and the press. Weighing 53,000 pounds, the green-painted machine is powered by twin GM diesel engines that develop 380 hp. The TC-12 is the forerunner of 20 units to be placed in experimental field service for further testing.

Along with the tractor, Euclid also showed for the first time three experimental rubber-tire scrapers—the S-7, S-18, and TS-18—of 7, 18, and 18 cubic yards struck capacity, respectively. The TC-12 tractor, the new scrapers, and the full line of Euclid earthmoving equipment were put through their paces at the proving grounds. Two of the powerful twin-engine tractors attracted the most attention, naturally, as they gave demonstrations of dozing, push-loading scrapers, and maneuverability. The giant machines spun around on the proverbial dime as an indication of their workability in close quarters.

Following the showing, Euclid and GM officials told the press that a price for the new tractor had not yet been established, but that it would be competitive with the price of other big tractors in the field. TC-12's are not expected to be available until the latter part of 1955.

In the meantime, experimental models will be field tested by contractors and strip mining operators. At first such testing will be done in the Cleveland, Ohio, area, where the Euclid plant is located, so that the manufacturer can maintain constant check on the equipment.

TC-12—Revolutionary Design

The innovation in the design of the new 380-hp crawler tractor is the twin-power principle, used for the first time in a tractor. With two engines and two separate power trains, the experimental TC-12 tractor is designed to have a greater drawbar pull at higher speeds and better steering qualities than crawler tractors now available.

Power is provided by two 190-hp GM diesel engines, each of which drives an Allison torque converter and an Allison Torqmatic transmission. Each drive train independently powers one track. The final drive gearing is the same planetary system used in Euclid's 50-ton dump trucks and 25-yard bottom-dump wagon.

With double the power of tractors now on the market, the 53,000-pound TC-12 is designed for a considerably higher power-to-weight ratio than that of present models. Because it is capable of a drawbar pull equal to or better than that of current crawler tractors, but at higher ground speeds, the new unit will be able to push-load rubber-tire scrapers faster. Reports of proving ground tests indicate that the TC-12 develops about twice the drawbar pull of present big tractors at a 2½-mph scraper-loading speed. This loading speed matches the first gear speed of rubber-tire scrapers.

The twin-power tractor has two separate drive and track assemblies that are free to oscillate on a 7-inch transverse shaft. The two-section design allows the tracks to maintain good traction because each half of the tractor has better ground contact in rough terrain than is possible with conventional units. The free movement of 7 inches is limited by stops welded to each frame half. With this segmented construction the Euclid twin crawler tractor can be separated for shipment where weight and width restrictions are encountered.

Each of the unit's two transmissions has an integrally mounted torque converter. The crawler-

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GORMAN-RUPP 125 M PUMP

and doing it on-the-job EVERY DAY!

NO OTHER PUMP, SIZE FOR SIZE, CAN EQUAL ITS PERFORMANCE

Our distributors are authorized to put a Gorman-Rupp Contractors' Pump on any pumping job, any time, anywhere, alongside any other make pump, size for size. The Gorman-Rupp pump is guaranteed to pump more dirty water more hours, using less gasoline and to prime quicker than any other self-priming pump. If it isn't the best all-around pump, our distributor will accept the return of the Gorman-Rupp pump and pay the user any installation expense incurred.

Only the utmost confidence in the product could justify this guarantee.

We can furnish you with any size of self-priming centrifugal pump ranging in capacity from 1½ in., 5,500 G.P.H. to the powerful 10 inch, pumping 240,000 G.P.H.

Ask for Contractors' Pump Bulletin No. 4—CP-11

GORMAN-RUPP PUMPS — SOLVE YOUR PUMPING PROBLEMS

GORMAN-RUPP
SELF-PRIMING
CENTRIFUGAL PUMPS

THE GORMAN-RUPP COMPANY
MANSFIELD, OHIO

PUMP EXPERTS STUDY CONTRACTORS' PROBLEMS

Contractors who have ever had a pump fail on the job realize the importance of choosing the proper pump.
A pump failure may hold up the job, cause men to be idle, tie up other equipment, or even prevent finishing the contract on time.
The best insurance is to have a pump that has proved itself on many tough assignments.
The Gorman-Rupp Company of Mansfield, Ohio claims that their pumps will out-perform any pump of comparable size and type on the market. So states their guarantee. The greater capacity of these pumps when working against high heads is very important to the contractor. They are the simplest of pumps and practically trouble-free. They never quit on the job.
Years of study and research by engineers in the field and the laboratory have made possible these claims and the guarantee.

FIELD NOTES *on the* BEST DIAPHRAGM PUMP *EVER BUILT!*

With mud, sludge and water seeping into a 28 foot pit for an industrial sewer installation, W. W. Purdy Construction Company of Mansfield, Ohio put this Gorman-Rupp 3" diaphragm pump 3D-8R6 on this job at the Empire Steel Corporation factory at Mansfield.
A junction of several six-foot storm sewer tiles was necessary. Rapidly rising water in the 12 x 22 foot pit flooded out workmen and 18 inches of mud and slime accumulated in the pit. The Gorman-Rupp diaphragm pump cleaned out the pit and had the workmen back on the job in 30 minutes.
This job involved an 18 foot suction lift, 8 foot discharge elevation and about 35 feet of horizontal 3" hose discharge line into an open manhole. No attention was necessary except fuel supply and starting or stopping when required. The unit is self-priming. It was necessary to operate the unit several minutes every hour.

THE GORMAN-RUPP COMPANY
MANSFIELD, OHIO

. . . and here it is shown bulldozing. In addition, it can pull the Euclid loader.

The S-18, one of three scrapers just introduced by Euclid, is an 18-yard machine.

tractor transmission provides three speed ranges forward and three in reverse. All shifting is done under full power. There is no master clutch. The tractor can be shifted from one speed range to another without loss of motion, and it can be shifted into reverse while it is moving in a forward direction. Top speed is 8 mph.

A fast, flexible steering system is a further advantage of the twin-power arrangement, which makes it possible to steer the tractor in several ways. Increasing or decreasing the speed of one engine results in a gradual even change in direction. The unit can also be steered by putting one transmission in neutral and applying a track brake. Sharp turns under full power are made by putting one transmission in forward and the other transmission in reverse.

In mounting the power components, Euclid had to design the machine so that all parts would be easily accessible for repairs. They succeeded to the point where the TC-12 can be almost completely dismantled without removal of the roller frames. Dismantling and reassembling can be done with ordinary servicemen's tools.

The engines are mounted side by side and drive through universal joints and drive shafts to the torque converter, which is mounted below and to the rear of the operator location. The converter, transmission, reduction gear, and steering brake form one complete removable assembly.

Experimental models of the TC-12 are equipped with a push plate for scraper loading, a hydraulically controlled 13½-foot bulldozer blade, a 17-foot 3-inch angle-blade dozer, and a pull yoke for a Euclid loader. Additional attachments are being planned, including cable-controlled bulldozers.

Specifications for the TC-12:

Hp: 380
Weight: 53,000 pounds bare
Travel speed: Up to 8 mph; 3 speeds
Engine: Two Detroit diesels, 190-hp each
Fuel: GM Detroit diesel fuel spexs
Starting method: Electrical
Number of track shoes: Each side, 39
Width of track shoe: 26 inches
Track length on ground: 115 5/6 inches
Area ground contact: 6,000 square inches
Transmission: Two Allison Torqmatic drives
Steering: With engines, transmissions, brakes
Clutch: None required
Length over-all: 15 feet
Width over-all: 11 feet 4 inches
Height (except exhaust stack): 8 feet
Ground pressure: 8½ pounds per square inch

New Self-Propelled Scrapers

The three new experimental rubber-tire Euclid scrapers will be manufactured in limited quantities this year. The Model S-7, a small self-propelled 7-yard scraper, is powered by a 138-hp GM diesel engine. Full 90-degree hydraulic steering enables this unit to make nonstop turns in 26 feet. Other major features are 18:00 x 25 tires, 5-speed transmission, three independently operated hydraulic scraper controls, and a 4-section interchangeable, reversible cutting edge.

A second new scraper introduced at the preview was the S-18, an 18-cubic-yard overhung machine. A 300-hp GM Series 6-110 engine is used in this scraper in conjunction with an Allison Torqmatic converter and transmission.

The new 380-hp twin-engine crawler tractor just introduced, together with the S-18 scraper, will provide a big-production, high-speed earthmoving combination.

Euclid also unveiled an experimental overhung-engine twin-power scraper, the TS-18. This unit features two 190-hp GM diesel engines —one in the tractor and the other behind the scraper bowl to drive the rear wheels. These engines drive through Allison Torqmatic converters and transmissions which supply power to the four drive wheels. The bowl of the TS-18 scraper holds 18 cubic yards measured struck.

For further information write to the Euclid Division, General Motors Corp., Cleveland 17, Ohio, or use the Request Card at page 18. Circle No. 504.

today—it's a bigger catch
with MUSCLES OF STEEL

Five billion pounds of fish yearly. It's a catch that would make the oldtime Gloucester fisherman gasp—yet it's all in the day's work for America's modern fishing industry. And it's a job that couldn't be handled without the aid of *muscles of steel*—indispensable wire rope.

Whether off the Newfoundland Banks, along the Gulf Coast, or in the waters of the Pacific, powerful winch-equipped trawlers depend on Wickwire Rope to haul in their heavily laden nets.

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PORTRAIT IN PRINT

A California Contractor's Formula for Making Good

By RAY DAY

BY CONCENTRATING on the management of his own business rather than worrying about his competitors, Emmet F. Core has made his general contracting firm at Bakersfield, Calif., not only a success, but an example to contractors who base their work on competitors' operations instead of their own potential.

Profitless low bids, Core believes, are made not because the contractors do not know better, but because they are too concerned with the next contractor's bid. By carefully gaging his potential for various kinds of work before bidding, Core found a method of operation which has clicked ever since he first began contracting 15 years ago.

Starting out at the height of the depression in the 1930's, Core threw all his effort into the management of his business, trying to stack the percentages with him instead of against him. After analyzing the contracting field as a whole, he critically examined his firm and its work potential to find the place where he might fit in the construction business. The answer, he decided, lay somewhere in a very narrow section of the construction field—doing jobs not quite big enough for the large contractor, but just a little too big for small outfits.

By staying religiously in his chosen field, and using exactly the same managerial techniques required by larger firms, Core has carved out a special niche for himself. The special management his business requires often parallels that in big contracting. A large combine, bidding on a multimillion-dollar dam, has to make the most careful estimates high-priced talent can devise. Core makes the same accurate cost breakdown on one of his own estimate forms, then delights in saving the owner money by taking a small job in payment by the hour. He fights the same running battle with low-unit cost that larger firms must make. And he emphasizes efficiency even more than many of the bigger contractors.

Varied Work

Appraising the situation when he started work in Bakersfield, Core recognized that variety would have to be his stock in trade. The city is constantly expanding. Industrial growth is keeping pace with the rise in population. Within easy driving range of the city is oil—the great Elk Hills reserve, Oildale, and farther north, other fields.

Core determined to master several specialized types of work needed in the vicinity. One of his first opportunities, service and cleaning work on oil and gasoline tanks, turned out to be standard business during

NEW COMPACTION RECORDS SET BY SOUTHWEST COMPACTION ROLLER

Cat DW21 Tractor equipped with 50-75 ton Southwest Compaction Roller

with Caterpillar Diesel Tractors

USING FEWER PASSES over heavier lifts the Southwest Compaction Roller is setting new records on every job. *On the bigger jobs* the combination of the Southwest Roller and Cat DW21 keeps pace with 24-hour job schedules and the largest earth moving equipment. With the extra flexibility of the exclusive Southwest independently oscillating weight-box units, you get uniform compaction weight on each tire regardless of ground contour. And there is no bridging, no shifting of load.

To suit varying job requirements the hauling yoke is sectionalized for adding or subtracting weight boxes... the yoke is also flanged to permit changing the draft beam assembly... and the weight boxes can be filled with any material to obtain desired total weight. Sizes and capacities range from 10 to 100 tons. Write for compaction data covering various types of soil and for illustrated literature.

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ALHAMBRA, CALIFORNIA

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PERFECT WEIGHT-LIFTING CONTROL

No line twist or kinking. Miller Ball Bearing Swivels turn freely under heaviest loading. 15 types. 700 lbs.-250 tons capacity.

Let us work with you to adapt Miller Swivels to your particular needs.

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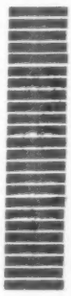

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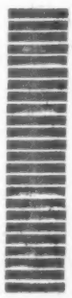

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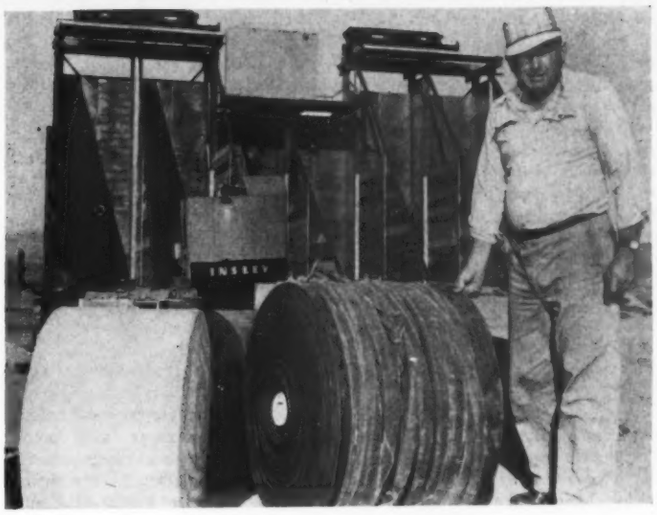
Emmet F. Core adapts his firm to customer's demands, doing jobs that large and small firms cannot handle



E. F. Core visits the site of a new concrete and aggregate plant project, where he will most likely keep an eye peeled for new work. The Bakersfield, Calif., general contractor never turns down small jobs, considering them stepping stones to more work.

World War II. Through the years, Core has enlarged on this work, so that now he also sets, dismantles, and salvages tanks and digs structure excavation for them. In his spare time, Core even manufactures small steel tanks.

Another opportunity existed in loading and unloading well-casing gravel from railroad cars. When Core came to Bakersfield no one was doing this work. Purchasing a crane and clamshell, Core started taking the job.

He made himself expert in the handling, placing, and demolition of concrete and structural steel. When the superintendent of a big school project in Bakersfield recently called, he was a little apologetic as he asked if Core would be interested in placing concrete for a 9-foot wall 3,000 feet long. Though the job amounted to only two hours of work a day, Core realized it would bring in about 26 dependable days of short-hour work which could be scheduled around other operations. Before the job was finished, Core secured other incidental jobs around the school grounds. Since then, the superintendent has called him in to do additional odd jobs in the Bakersfield vicinity.

One of Core's specialties is preparing an oil location for drilling. It's a combination digging and concrete job, calling for the clamshell-bucket excavation of a small drilling cellar and the placing of about 26 yards of concrete for the drill platform. Later on, the platform is used for permanent pumping equipment. Core has become so adept at the job that he can complete it in 4 to 8 hours. To date, his equipment has constructed approximately 300 such installations, taking a day or less to do each job.

"Bread and Butter"

Perhaps the strangest side to Core's business is what he calls his "bread and butter" trade. These odd jobs—some of them requiring only 30 minutes—bring him a steady income each month. They're usually accompanied by apologies from customers—like a man who needs a

(Continued on next page)

UNDERGROUND PRODUCER

Underground in mines, construction jobs — the Eimco 105 with the Eimco excavating attachment is the big producer.

Loading trucks with abrasive heavy ore at the rate of 8 to 10 tons per minute, Eimcos in this mine, have steadily reduced the cost of loading ore every month since their installation.

Eimcos are built to withstand the most severe treatment working on uneven bottoms, digging in blocky, broken rock and moving in narrow passages or big rooms with definite limitations in headroom.

Unusual Eimco features make them a standout for performance. Some of these features include frame mounting of the excavating attachment to provide for free oscillation of the tracks at all times, variations in Rocker-Arms and buckets to meet all requirements for headroom and material to be loaded. Independent track control with finger tip operating levers and many other exclusive features.

Write for complete information.

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Salt Lake City, Utah—U.S.A. • Export Offices: Eimco Bldg., 52 South St., New York City

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In a Hayward, there's no contact between the closing mechanism and the material handled. This "no contact" feature is a very important one to you—since it means much less wear, reduced upkeep, and a significant dollar-saving in bucket maintenance.

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HAYWARD BUCKETS

CLAM SHELL • ELECTRIC • ORANGE PEEL • GRAPPLES

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(Continued from preceding page)

basement dug, someone who wants a swimming pool excavated, a dairy official who has to have some stanchions set. The job might come from a power company which finds it necessary to move a transformer, or from a man who wants a truckload of heavy crates unloaded at the freight depot. In one case, a farmer whose haystack was on fire made an emergency call, begging Core to rush to the farm and tear the stack apart, scattering the hay so that firemen could douse the flames.

But even though customers feel the need to apologize for bothering him with such small jobs, Core doesn't think apologies are needed. For him, the work is a source of valuable contacts. Many times, as a result of taking these small assignments, Core has developed larger, more important, and longer lasting work.

"Do's and Don'ts"

Through all these operations, Core has formulated several rules regarding the management of a small construction business:

(1) Make your word good. If you make an appointment to do a job on a certain day at a certain time, keep that appointment on time.

(2) Treat your customer's money as if it were your own, regardless of whether the job is on a unit bid, an equipment-rental basis, or a per-hour pay. One of the strongest arguments for repeat business is the fact that you once did a job in four hours for $40 after every one had figured it would take a day's time and cost twice as much.

(3) Take advantage of every opportunity. Look for business and work to get it. The owners of a small job don't know as much about the job's problems and solutions as a man who specializes in doing the work.

(4) Make yourself accessible. Keep in touch with your office several times a day by telephone. Core does this sometimes by using a telephone installed in his pickup truck.

(5) Make a habit of giving owners specific maximum project costs. Then quote the minimum cost and shoot for the lower figure.

(6) Always be alert to speed up production. Work out easy ways of doing the tougher assignments, and be quick to adopt cost-cutting techniques.

On the negative side, Core also has several suggestions:

(1) Don't worry too much about your competition. Build up your own performance instead.

(2) Don't be hesitant. Many productive paying assignments can be had simply for the asking.

(3) Don't take jobs at figures which fail to allow for a fair profit.

(4) Don't turn down small jobs. Too often they lead to big work in the future.

(5) Don't stray outside your chosen field until you are absolutely sure you are ready for the change.

Demonstrates Growth

The soundness of these rules is shown in the growth of Core's business. Starting out in 1932 with a set of hand tools, Core took small jobs as a handyman. In 1934, after a night course in welding, he bought an old Smith acetylene welding outfit which he still owns. Feeding his business before he fed himself, Core purchased an electric drill. In 1936, his business required a concrete mixer. Then came a trailer for hauling the concrete mixer, a house trailer, an Oster pipe machine, a David White transit.

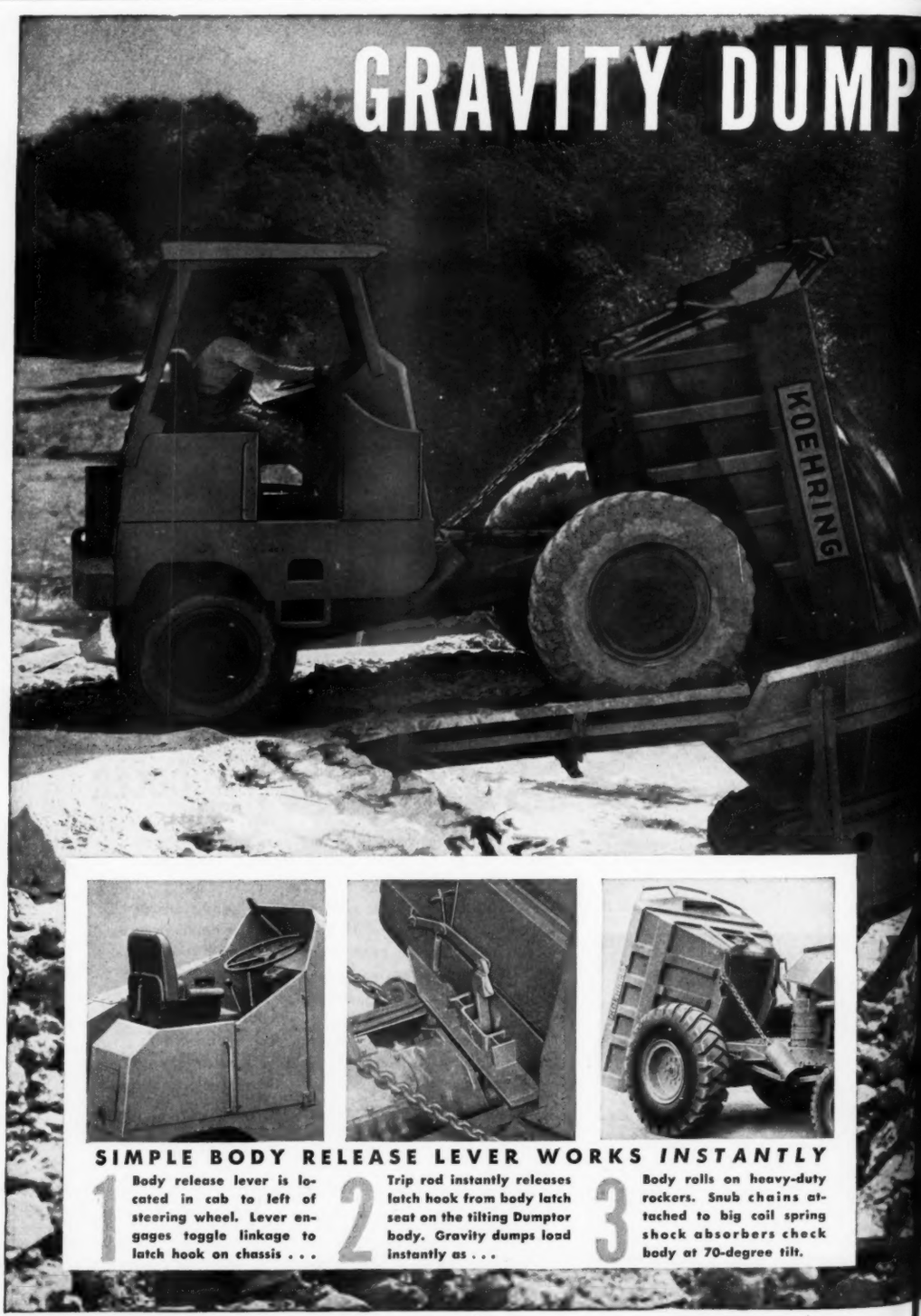
And all the while he was gathering a complete set of gages, a pipe locator, heavy-duty tools, a field telephone set for special tank work, and other small equipment.

An important purchase was the jeep-mounted handyman rig for special tank work. The $3,500 rig carries a 60-cfm Schramm compressor, two Thor 38-pound jackhammers complete with pavement-breaker attachments, moil points, earth tampers, and chisels, a set of Chicago Pneumatic impact wrenches, and a Chicago Pneumatic sump pump. Core keeps the rig available whenever he has a tough assignment. Frequently he brings the rig along when it is only possible that it may be needed, charging the owner only for the actual time the machine is employed. That investment brings in $7.50 an hour on a rental basis.

An asphalt sprayer, a weed sprayer, a tank-coating gun, and a Kellogg paint-spray outfit were added to his equipment roster after World War II. An Ingersoll-Rand rock drill and a jeep-mounted ditching machine, which he has since worn out, also augmented the list.

By 1950 he was ready for bigger equipment to handle work he could take for the asking. In that year he purchased an International KB-6 truck carrying a Bucyrus-Erie H-3 Hydrocrane. He operated this first machine himself. In 1951 he added an Allis-Chalmers tractor-mounted dozer for backfill, and picked up a pole trailer to haul materials and supplies behind the Hydrocrane. He bought a Barber-Greene ditcher. A set of complete equipment to clean gasoline tanks was added. Last year, Core added a second Hydrocrane to his equipment, purchased a Caterpillar No. 11 motor grader, a complete set of shop tools, and a Beaver pipe machine capable of working anything from ⅜ to 6-inch diameter. That year saw the purchase of a Lincoln SA200 portable arc-welding machine, and an L-120 International pickup.

Core still operates all of this equipment with a minimum of help. One associate operator handles the second Hydrocrane, and Core takes the other machine out himself. A full-time office girl takes calls and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KOEHRING
SIMPLE BODY RELEASE LEVER WORKS INSTANTLY
1 Body release lever is located in cab to left of steering wheel. Lever engages toggle linkage to latch hook on chassis . . .
2 Trip rod instantly releases latch hook from body latch seat on the tilting Dumptor body. Gravity dumps load instantly as . . .
3 Body rolls on heavy-duty rockers. Snub chains attached to big coil spring shock absorbers check body at 70-degree tilt.

mails invoices. Prompt business-like collections, the essence of success in small contracting, are handled immediately. Revenue-wise, Core's policies have paid off.

Last year, Core and his wife, Dorothy, flew back to Evansville, Indiana, to pick up his second Hydrocrane at the Bucyrus-Erie factory. Because of a distribution snarl, there was a boom available for the machine at Crook Co. in Los Angeles, but none in Evansville. So Core started west with the new machine minus a boom. When he talks about that trip, you know what he means by seizing every opportunity.

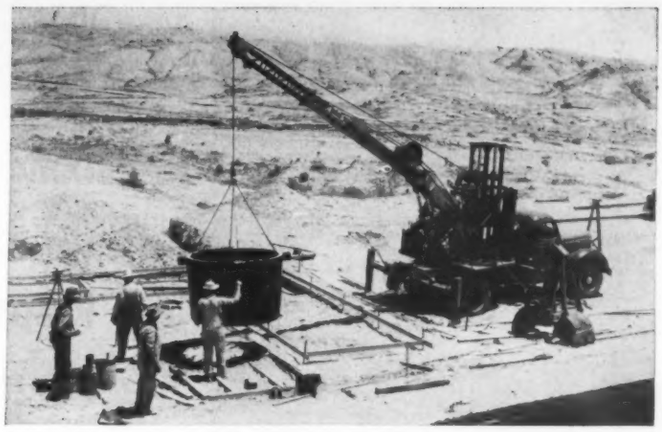
"In Missouri," he said, "we saw men using wheelbarrows to place concrete for the headwall of a bridge. It probably took them all day, but if I'd had my ½-yard concrete-placing bucket we could have had that crew out of there before noon.

"In Oklahoma we saw a contractor using a Northwest Model 6—a 1½-yard machine—to make about the same size pour. We could have saved him money too.

"Across the Texas Panhandle I saw five different jobs which needed to be done in the oil fields. I could have done all those jobs easily—all I needed was a boom and a contractor's license, and I might never have got back to Bakersfield until the machine was paid for."

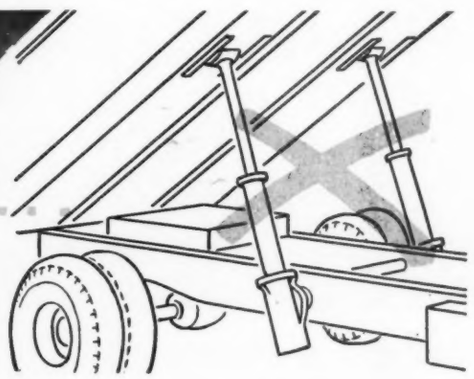
Perhaps he didn't realize it himself, but Core was practicing his formula for success—gaging a job in relation to the capacity of his firm. Even then, on the trip back home, Core was automatically using the principles of management which guided his company to success.

THE END



◄ Core operates one of his Bucyrus-Erie Hydrocranes to lift a mud collar into position for a drill platform at an oil well. The basis of his success lies in doing specialized jobs like this, adapting his business to work required in the area.

P eliminates body hoists. . . .



Koehring Dumptors®

have no slow-working body hoists. Operator trips the body-release lever . . . and gravity dumps the 6-yard load in just one second. It's as simple as that!

Saves 20 seconds every time you dump Because there is no waiting for slow-raising body hoists, one-second dumping saves 15 to 25 seconds dump-time on every cycle. This gives you more productive haul-time . . . earns an important increase in extra yards per hour.

Never balks . . . never wears out . . . There are no expensive hoist replacement parts, hoist maintenance or down time to eat into your profits. Koehring gravity dump is always instantaneous, trouble-free in all temperature extremes . . . never balks . . . never wears out.

No spring maintenance is another money-saving Dumptor advantage. There's just one big, double-coil chassis spring on steering axle, none on driving axle. Big shock-absorbing drive tires eliminate need for more springs . . . save spring maintenance time and replacement costs.

Check your body hoist and spring maintenance costs for a year. See how much you'll save when you haul with Koehring heavy-duty Dumptors. Get all the facts from your Koehring distributor soon . . . or write us for 28-page Dumptor catalog.

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K341

Foam-Rubber Seat For Power Shovel Cabs

■ A foam-rubber seat for any power shovel, crane, or dragline is made by Airtress-Midland, Inc., 1833 W. 2nd St., Davenport, Iowa. The Model 1P5 seat is designed to reduce operator fatigue.

Features include a fingertip adjustment that provides five forward or backward positions and six height positions. The seat tilts out of the way for maintenance.

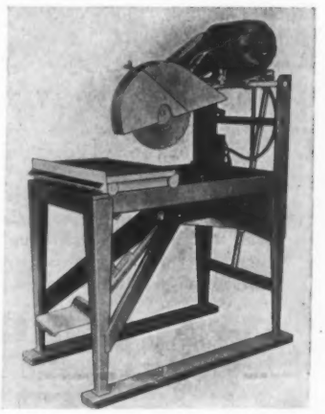
For further information write to the company, or use the Request Card at page 18. Circle No. 466.

New Masonry Saw

■ An improved masonry saw for both wet and dry cutting features quick setup and takedown, unusual capacity, and easy arbor-height adjustment. All adjustments are made from the operator's position in front of the machine. The Di-Met masonry saw, manufactured by the Felker Mfg. Co., 1128 Border Ave., Torrance, Calif., performs angle, skew, step, and through cutting. This machine uses either ordinary abrasive wheels or diamond abrasive blades.

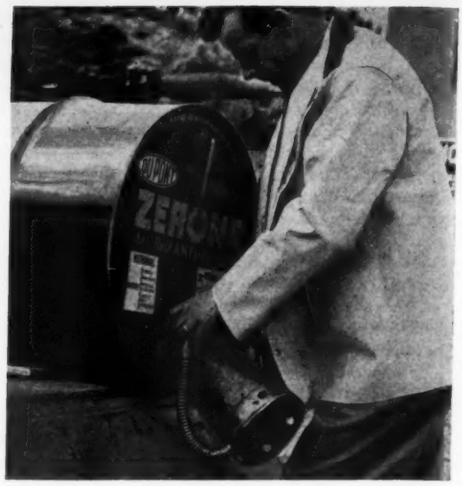
The head is equipped with a 1½-hp 110/220-volt ac single-phase motor. Arbor-height adjustments are instantly made by tilting the foot pedal, lifting the counterbalanced arbor, and releasing the pedal.

For further information write to the company, or use the Request Card that is bound in at page 18. Circle No. 382.



Mixed with water beforehand, anti-freeze solution is added to the cooling system of a Euclid. Since the fluid was checked with a hydrometer just after it was mixed, no other checks will be necessary as additional solution is added from time to time.

Premixing Simplifies Anti-Freeze Protection



A drum of Zerone premixed anti-freeze is mounted on a Ford service truck so that equipment operators and maintenance men can service equipment in the field. Keeping the solution at the proper level in radiators will provide adequate protection.

CHIEF MECHANICS, turning their attention to cold-weather protection for their off-the-road equipment at this time of year, are again facing a familiar annual problem: How much anti-freeze should I use?

Using too much anti-freeze in cooling systems means waste and inefficiency. If too little anti-freeze is used, there is a danger that engines may be ruined with a sudden drop in temperature.

An answer to the problem, evolved by Du Pont anti-freeze experts, calls for the use of a premixed anti-freeze and water solution in fleet units. Not only does the plan provide adequate and economical insurance against engine damage, but it also does away with much of the waste of time and effort now expended in winterizing fleet units.

Usually, servicing vehicles means that the proper amount of anti-freeze specified by the manufacturer's protection chart must be poured into the radiator, and water added to the solution. The solution is then checked with a hydrometer. Each vehicle requires the same attention. Then, as winter passes, some of the coolant is lost and additional anti-freeze must be added. Generally, more anti-freeze than necessary is used. More time is consumed as additional checks are made throughout the winter.

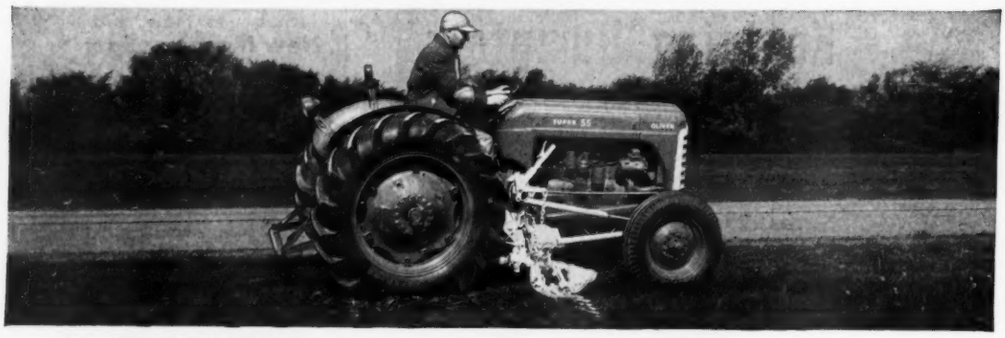
Mixing

Premixing is relatively simple. The anti-freeze is mixed with water to produce a solution that will protect the cooling system in the lowest temperatures expected in the area. The mixing is done in a separate tank, or in a standard 54-gallon drum in which Du Pont Zerone and Zerex are delivered. If one of these drums is used, an empty drum or other container is used to hold the anti-freeze which must be drained off to make room for the water.

Once the mixture is made, a reading is taken with the hydrometer to make sure the solution is strong enough. Once the anti-freeze tester is used at the time of mixing, there is no longer any need for it.

Since Zerone and Zerex do not require additional stirring or shaking once they have been premixed, the solution can be prepared in advance, then added to cooling systems as required through the winter. If nothing but the premixed solution is used, the degree of protection remains unchanged. Anti-freeze products using an oil-type rust inhibitor

diesel or gasoline power



in OLIVER'S *new Super 55*

most powerful tractor of its type!

Two husky overhead valve Super 55 engines to choose from! Pick the fuel that fits your needs the best, cuts your costs the most.

The diesel is a *full* diesel—starts and runs on diesel fuel alone. An engine rugged and responsive, and one that takes little upkeep. And this diesel is weatherproof—easy to start even after long layups.

Pick the gasoline, and you get an engine with a compression ratio of 7.0 to 1—highest for an industrial tractor! Extra high compression means greater power on less fuel, better performance on every job.

See this new Oliver, drive it yourself! Check its power, handling qualities and many attachments. Check, too, its many standard features—6 forward speeds, double-disc brakes, ball-type steering. See your Oliver Industrial Distributor, soon!

THE OLIVER CORPORATION
400 West Madison Street, Chicago 6, Illinois
a complete line of industrial wheel and crawler tractors

must be stirred or agitated again before being used, because the inhibitor will not stay in solution while the mixture is standing.

With the premixing system, winterizing equipment—and keeping it protected all winter long—requires no more effort than filling the radiator. Time spent on the cooling system is kept to a minimum, there is no waste of anti-freeze, and there is no danger of someone making a careless hydrometer check which may lead to costly repairs. THE END

Folder on Rehandling And Digging Buckets

■ A line of rehandling and digging buckets is illustrated in a folder from the Industrial Brownhoist Corp., Bay City, Mich. The literature lists capacities, weights, etc.

Rehandling buckets are covered in spade capacities of 24.2 to 79 cubic feet. Capacities of heavy-duty digging buckets listed range from 25 to 74.3 cubic feet.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 376.

Insley Executive Shift

The Insley Mfg. Corp., Indianapolis, Ind., manufacturer of excavators, cranes, and concrete-handling equipment, has announced three changes in its executive organization. William B. Elliott, former president of the firm, has become chairman of the board of directors. James R. Elliott, who had been executive vice president, succeeds him as president, and William T. Elliott is executive vice president.

The Hyster 2,000-pound-capacity lift truck can now be carried behind a truck on a specially built trailer, to load or unload the transport without delays. After the lift truck loads the transport, it is driven onto the small trailer over a hinged ramp which serves as a tailgate while traveling. Upon the arrival at its destination, the lift truck is driven from the trailer and used to unload material quickly without additional manpower. For further information write to the Utility Trailer Sales Co., 155 Bay Shore Boulevard, San Francisco, Calif., or use the Request Card at page 18. Circle No. 371.

waterline

Construction Time Cut in Half

IN KALAMAZOO, MICH. a trench for 8″ cast iron concrete-lined pipe was being dug in soft loose soil always in danger of caving in. Pipe was being laid at only half the possible speed of trenching—so excavating was slowed accordingly to minimize the risk of cave-ins.

The City Light and Water Utilities overcame this situation by putting a Cleveland Model 80-W on the job to handle and lay pipe. The one-man-operated 80-W not only performed all the pipe installation operations fast enough to permit full-time trenching but also performed the additional backfilling required by this job speed-up. Net result: construction time for the entire project was cut in half.

Write for descriptive literature and specifications or get the full story on CLEVELANDS from your local distributor.

THE CLEVELAND TRENCHER CO.
"Pioneer of the Modern Trencher"
20100 ST. CLAIR AVENUE • CLEVELAND 17, OHIO

VACU-LUG *means*

LOW *maintenance cost!*

TOP QUALITY *performance!*

RELUG WITH VACU-LUG!

Vacu-Lug, the miracle process for renewing traction on worn tires, cuts tire maintenance in half. Yes, you save over half the cost of new tires, regardless of size when your worn ones are relugged by the famous Vacu-Lug Process.

Here is a proven method of traction restoration — tested and approved by U. S. Agr. Dept., laboratories, contractors, and municipalities. These new lugs are applied individually from crude rubber stock and are vulcanized to the tire in a huge steam chamber. What's more important, there is a shop near you ready to give instant service — to reduce down-time to a minimum.

Write for name of Vacu-Lug Shop nearest you.

Tears and breaks in the casing can be repaired at the same time the tires are being relugged. All repair and relugging work are completely guaranteed. Renew power loss — get Vacu-Lug now!

AMERICAN TIRE MACHINERY, INC.
MUNCIE, INDIANA

The Pettibone Wood Model P-600 Preparizer has been improved by a new diesel engine power source. ►

Pavement Preparizer Gets New Diesel Engine

■ The Pettibone Wood Model P-600 Preparizer is now powered by a GMC 671 diesel engine, according to the Pettibone Wood Mfg. Co., 6900 Tujunga Ave., North Hollywood, Calif. The P-600 Preparizer scarifies, pulverizes, and prepares old pavement or hard soils for paving. The new engine is equipped with a Fuller four-speed transmission which gives variable speeds to the rotor shaft, thereby providing a range of power to handle any pulverizing job.

The Preparizer also features a new breaker bar for faster breaking of hard asphaltic materials. New longer-lasting drive-on paddle plates are now used, and the number has been reduced from 48 to 24.

For further information write to the company, or use the Request Card at page 18. Circle No. 406.

Battery-Powered Pump

■ An electrically-powered hydraulic pump is offered by Jarp Corp., P. O. Box 478, Wausau, Wis. The new Jarp PumPac is a compact package consisting of a pump, an oil reservoir, and a valve. The combination, when connected to any 6 or 12-volt battery, develops a variable range of pump pressure from 2,000 to 5,000 psi. The pump and tank are designed to permit the use of a spring-actuated piston.

The pump and motor of the unit are made into one assembly for easy mounting. In repairing either unit, the motor can be separated from the pump simply by removing two bolts.

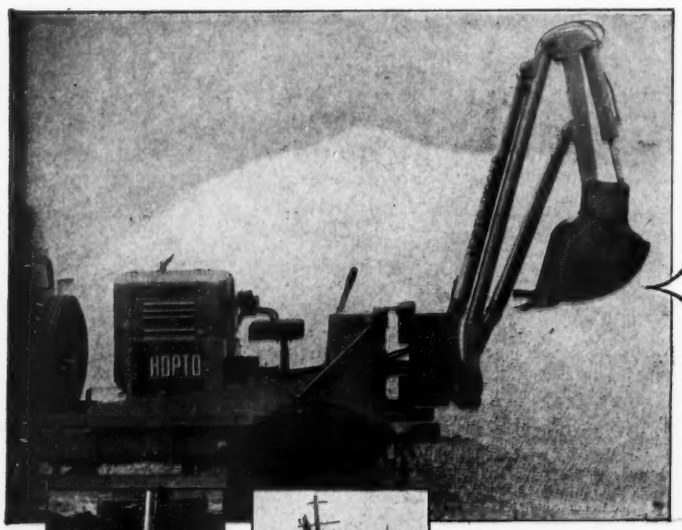
For further information write to the company, or use the Request Card at page 18. Circle No. 446.

Flexible-Shaft Grinders

■ Literature showing a comprehensive line of flexible-shaft grinders is offered by Wyzenbeek & Staff, Inc., 223 N. California Ave., Chicago, Ill. The standard Wyco flexible-shaft machines listed in this catalog include single and multiple-speed machines in bench models, floor types, suspension-type units, and machines for truck mounting.

There is also a list of flexible shafts with hand pieces and motor couplings for direct connection to any motor. A variety of grinding wheels, wheel arbors and adaptors, sanders, polishers, and angle heads are also included.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 428.



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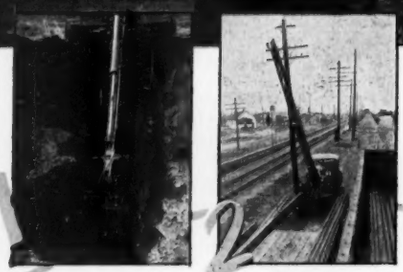
VERSATILE
HOPTO
GIVES YOU
3-WAY
WORK CAPACITY



DIGGER
CRANE
SHOVEL

SIMPLE TO OPERATE...FAST CYCLING...200° SWING

There is no longer any need to just wish for a mobile crane, a fast cycling power shovel, with a capacity of 40 cubic yards per hour, a portable digger that can do 'straight-down' digging to a depth of 11'!!! You get them all in the low-cost truck HOPTO. Just mount this completely hydraulic unit on any 1½ ton or larger truck that still runs but which may have been already completely charged off on your equipment inventory! Now you have a mobile Digger-Shovel-Crane with world-famous work capacity *and at the lowest possible equipment investment!*

The simple handling of HOPTO is quickly mastered by any handy man or utility man. Four hydraulic controls are conveniently banked in front of the operator who has unrestricted visibility of work at hand. Hydraulic stabilizers assure a firm loading platform, take weight of heavy lifting off the truck springs.

Crane boom is optional equipment, may be equipped with hydraulic control grapple. Backhoe and shovel buckets are available in a wide variety of sizes and designs for material handling and for digging, trenching and excavating in all types of soils.

CHOICE OF MODELS

All the outstanding features of the truck-mounted HOPTO are also available in other models to best fit your needs at lowest possible equipment investment. Self-powered trailer models, power take-off trailer type models and HOPTO units for rear mounting on track type tractors are available in addition to the two models shown.

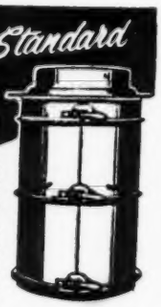
SELF-POWERED HOPTO UNIT

Model SPC HOPTO is a complete Badger-built unit powered by an MM 206-4A. Other power units can be furnished on request. Unit has a bearing pressure of only three pounds per square inch to permit uninterrupted operation in swampy or muddy soils. Comfortable seat for operator swivels for easy access to operating and driving controls. Extremly long reach permits all HOPTO models to work all of a thirty-two foot semi-circle without moving unit.

Write TODAY for complete information and specifications of the HOPTO model that best fits your needs!

BADGER MACHINE CO.
WINONA, MINNESOTA • DEPT. E

The Quinn Standard FOR CONCRETE PIPE



The Quinn Standard is known as the best the world over, wherever concrete pipe is produced and used. Backed by over 40 years' service in the hands of hundreds of Quinn-educated contractors, municipal departments and pipe manufacturers who know from experience that Quinn pipe forms and Quinn mixing formulas combine to produce the finest concrete pipe at lowest cost.

QUINN HEAVY DUTY PIPE FORMS

For making pipe by hand methods by either the wet or semi-dry processes. Built to give more years of service—sizes for pipe from 10" up to 120" and larger—tongue and groove or bell end pipe at lowest cost.

WRITE TODAY. Complete information, prices and estimates sent on request.

Also manufacturers of
QUINN CONCRETE PIPE MACHINES

QUINN WIRE & IRON WORKS 1645 - 12th St. Boone, Iowa

CONVENTION CALENDAR

October 5-8 Ohio Short Course on Roadside Development
Ohio Short Course on Roadside Development, Deshler-Hilton Hotel and Departments of State Building, Columbus, Ohio. Wilbur J. Garmhausen, chief landscape architect, State Highway Department, Columbus 15, Ohio.

October 6-8 Virginia Highway Conference
Virginia Highway Conference, Virginia Military Institute, Lexington, Va. R. P. Ellison, executive assistant, Department of Highways, Richmond, Va.

October 14-15 Diesel Operator's Conference
Diesel Operator's Conference, Student Union, University of Nebraska, Lincoln, Nebr. Robert A. Ratner, supervisor of institutes, 101 Architectural Hall, University of Nebraska, Lincoln, Nebr.

October 15-16 National Society of Professional Engineers
Meeting, National Society of Professional Engineers, Hotel Fontenelle, Omaha, Nebr. Paul H. Robbins, executive director, NSPE, 1121 15th St. N. W., Washington, D. C.

October 18-22 American Society of Civil Engineers
Annual Convention, American Society of Civil Engineers, Hotel Statler, New York, N. Y. Don P. Reynolds, assistant to the secretary, ASCE, 33 W. 39th St., New York 8, N. Y.

October 18-22 National Safety Congress and Exposition
Forty-second Annual National Safety Congress and Exposition, Hilton, Congress, Palmer House, Morrison and LaSalle hotels, Chicago, Ill. G. E. Burns, congress manager, NSC, 425 N. Michigan Ave., Chicago 11, Ill.

October 21-22 Highway and Surveying Conference
1954 Highway and Surveying Conference, University of Florida, Gainesville, Fla. Thomas L. Bransford, associate professor of civil engineering, University of Florida, Gainesville, Fla.

October 25-27 American Concrete Pipe Assn.
Fourth Annual Short Course of Instruction, American Concrete Pipe Association, Hotel Statler, St. Louis, Mo. Howard F. Peckworth, managing director, ACPA, 228 N. LaSalle St., Chicago 1, Ill.

October 25-27 National Lubricating Grease Institute
Meeting, National Lubricating Grease Institute, Mark Hopkins Hotel, San Francisco, Calif. Harry F. Bennetts, executive secretary, 4638 J. C. Nichols Parkway, Kansas City, Mo.

October 25-28 American Institute of Steel Construction
Meeting, American Institute of Steel Construction, Greenbrier Hotel, White Sulphur Springs, W. Va. L. Abbett Post, executive vice president, AISC, 101 Park Ave., New York 17, N. Y.

October 28-29 American Concrete Institute
Seventh Regional Meeting, American Concrete Institute, Hotel Statler, Los Angeles, Calif. William A. Maples, secretary-treasurer, ACI, 18263 W. McNichols Road, Detroit, Mich.

November 9-11 American Assn. of State Highway Officials
Meeting, American Association of State Highway Officials, Olympic Hotel, Seattle, Wash. Hal H. Hale, executive secretary, AASHO, 917 National Press Bldg., Washington 4, D. C.

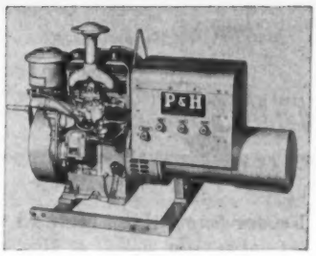
November 29 Bituminous Concrete Producers Assn.
Tenth Annual Convention, New York State Bituminous Concrete Producers Association, Hotel Statler, Buffalo, N. Y. Gus Rayner, executive secretary, BCPA, Box 667, Albany, N. Y.

December 9-10 Mississippi Valley Flood Control Assn.
Meeting, Mississippi Valley Flood Control Association, Roosevelt Hotel, New Orleans, La. Bruce Tucker, executive vice president, MVFCA, Suite 203, Hotel Peabody, Memphis, Tenn.

The new P&H Model WN-150 gasoline-engine-powered arc welder.

Portable Welding Unit

■ A new compact gasoline-engine-driven arc welder is available from the Harnischfeger Corp., 4601 W. National Ave., Milwaukee 46, Wis. Power for the Model WN-150 welder is supplied by a two-cylinder engine close-coupled to the P&H-built welding generator. Control has been simplified by the use of plug-in stations and by a variable-speed engine which covers the full heat range. Capacity is 20 to 200 amperes.



Weight of the new model, which is available on a two-wheel mounting, is 425 pounds.

For further information write to the company, or use the Request Card at page 18. Circle No. 357.

Concrete Core Drills

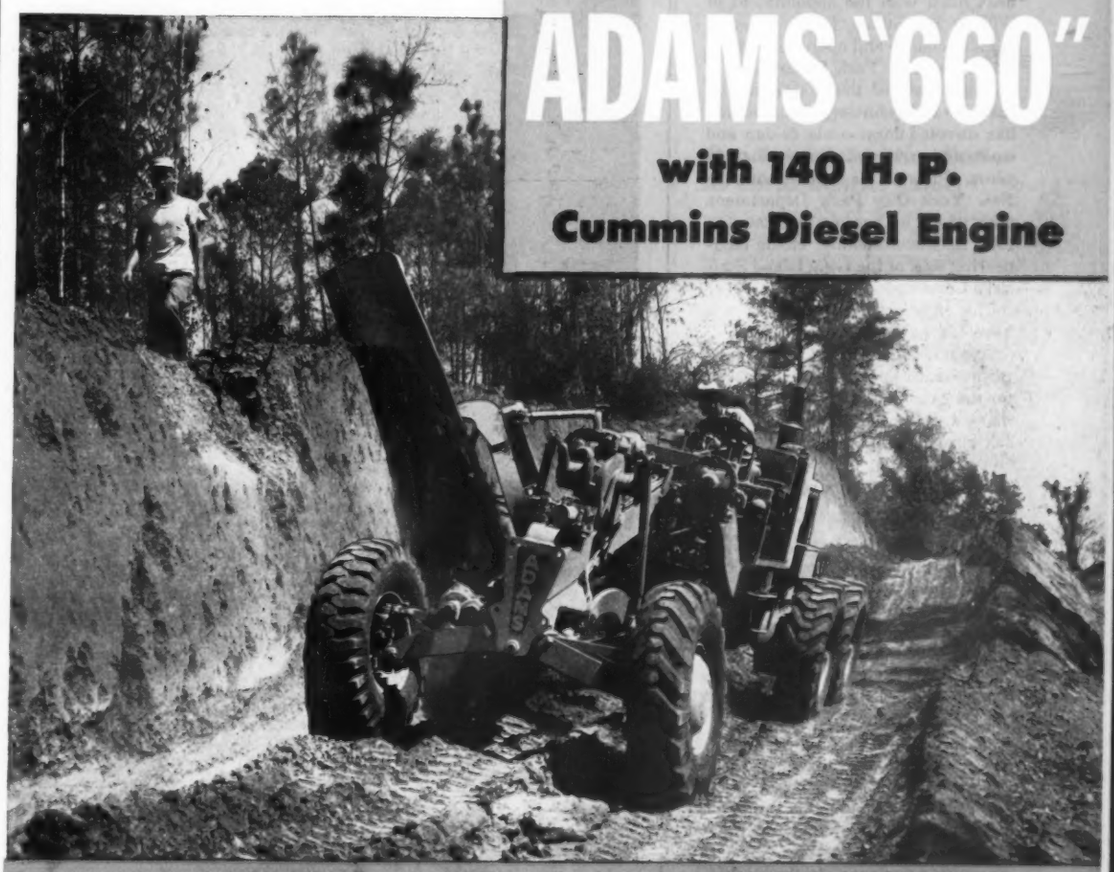
■ A booklet is available on the rotary concrete core drills made by the Tilden Tool Mfg. Co., 209 Los Molinos Ave., San Clemente, Calif. The folder outlines specifications, recommends speeds and pressures, and tells of sizes of Konkrete Kore drills to use for various types of work.

The Tilden line includes tungsten-carbide rotary and hammer bits, water-feed drills, Morse tapers, drilling jacks, and special rock and tile drills.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 344.

Does up to 30% more work than any grader you have ever used

ADAMS "660"
with 140 H. P.
Cummins Diesel Engine



Does hard jobs easier
Does most jobs better
Does any job faster

That means more money in the bank

Let Us Show You!

MAIL COUPON FOR COMPLETE INFORMATION

J. D. Adams Manufacturing Co.
P. O. Box 853
Indianapolis, Indiana

I'm interested in your claims for the Adams "660." Tell me more.

Name.....

Connection.....

Street Address.....

City & State.....

Ed. 1954

NAMES IN THE NEWS

William H. Latham, resident engineer on the St. Lawrence power project for the N. Y. State Power Authority.

Latham Named Resident Engineer on Seaway Job

The position of resident engineer in charge of construction on the St. Lawrence power project for the New York State Power Authority has been filled with the appointment of William H. Latham, former director of maintenance and operations in the New York City Park Department.

A graduate of the Massachusetts Institute of Technology, Mr. Latham has directed large-scale design and construction work for more than 30 years. Prior to his service with the New York City Park Department, with which he became associated in 1934, he was a member of the engineering staff of the Long Island State Park Commission.

The new resident engineer will have offices in Massena, N. Y.

Appointed to succeed Latham as maintenance and operations director for the New York City Park Department was George Quigley, Manhatton borough director.

Stone & Webster Corp. Makes Personnel Changes

Edward E. Bigelow, structural engineer on many Stone & Webster Engineering Corp. projects throughout the country for the past three years, has been appointed engineering manager of the Boston, Mass., firm. Mr. Bigelow joined the Stone & Webster organization in 1923 as a structural draftsman.

Several other staff changes have been made in various divisions of Stone & Webster. Myrton H. Cutler is now chief engineer for the structural division, succeding Ernest A. Dockstader, who has been made consulting engineer. In the mechanical division, Thomas A. Fearnside is the chief engineer. He succeeds Burton C. Mallory, recently named consulting engineer. The chief engineer for the electrical division is Leslie O. Waite. Mr. Waite takes the place vacated by Raymond R. Wisner, also appointed a consulting engineer. Olcott L. Hooper, as the new chief hydraulic engineer, will head the hydraulic division. He succeeds George R. Strandberg, now a consulting engineer for the company.

Kaiser Executives Named

Sam Ruvkun and J. E. Hughes have been made assistants to the vice president of Kaiser Engineers, a division of Henry J. Kaiser Co., Oakland, Calif.

Mr. Ruvkun, formerly a project engineer on many assignments, more recently was a member of a survey team for the International Bank for Reconstruction and Development in Finland. Mr. Hughes has been with Kaiser since 1941 as an engineer.

The Asphalt Institute Names District Engineers

Two new district engineers, Raleigh W. Gamble and Merritt R. Royer, have been appointed by The Asphalt Institute, New York, N. Y.

Mr. Gamble, district engineer for Illinois and Wisconsin, will have headquarters at 11 S. La Salle St., Chicago. Arkansas, eastern Kansas, Missouri, and eastern Nebraska will be covered by Mr. Royer from his headquarters at 15 W. 10th St., Kansas City, Mo.

Before his appointment, Mr. Gamble was for 30 years superintendent of the Bureau of Street Construction and Repairs in Milwaukee, and for the last four years served also as director of expressways. He is a member of the American Society of Civil Engineers, the American Road Builders Association, the Wisconsin Society of Professional Engineers, and the Engineering Society of Milwaukee. Mr. Royer, a member of the Kansas Engineering Society, was with the Kansas State Highway Commission for 20 years.

Former Vice President Of Turner Co. Dies

Walter K. Shaw, former vice president and treasurer of the Turner Construction Co., New York, N. Y., died September 12 at his home in Scarsdale, N. Y., after a long illness. He was 64 years old.

After graduating from Cornell University in 1913, Mr. Shaw joined Turner as an assistant engineer. Elected vice president and treasurer in 1937, he retired last year because of ill health.

GYRO-FLO
ROTARY COMPRESSORS

117 units speed construction of the New York Thruway

These four 600 cfm GYRO-FLO portables supply ample air power for operating up to eleven I-R wagon drills on one section of the New York Thruway. Air from a common receiver is piped 700 to 800 feet to the drilling site through a 6" line. In the background is a completely self-contained I-R Quarrymaster for sinking large, deep blast holes.

Here, an I-R GYRO-FLO supplies abundant air for operating a pneumatic pile hammer, driving sheet piling for construction of one of the Thruway's many bridges.

The GYRO-FLO compressor has repeatedly proved its ability to operate continuously under all types of working conditions, with a trouble-free dependability and easy portability heretofore not obtainable in any portable air compressor.

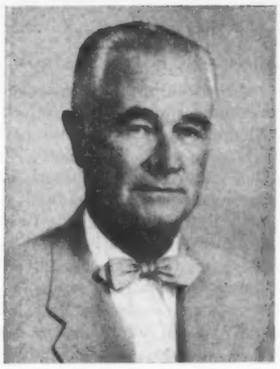
These compressors furnish air to users of 173 Ingersoll-Rand Type FM Wagon Drills—more than 70% of the total wagon drills on this project.

STOPPING OVER in Anchorage, Alaska, to visit with Col. Carl Y. Ferrell, U. S. Army Corps of Engineers district officer, are Harry Morrison, left, president of the Morrison-Knudsen Construction Co., Boise, Idaho, and C. Jack Haglund, right, vice president and Alaska district manager for the firm. Some $25 million in military construction is being done by M-K in the territory. *U. S. Army Corps of Engineers Photo*

Highway Research Board Promotes Elmer M. Ward

Elmer M. Ward has been named assistant director of the Highway Research Board, Washington, D. C. Joining the technical staff of the board in 1946 as engineer of maintenance, Mr. Ward was also made engineer of materials and construction in 1949. He held these positions until his present appointment.

Prior to his work with the Highway Research Board, he was on the staff of the Military Roads Branch, Research and Development Board, at Belvoir, Va., from 1941 to 1946. A graduate of Iowa State College with a degree in civil engineering, and a member of the American Society of Civil Engineers, Mr. Ward also spent 14 years with the Iowa State Highway Commission.



Frederick C. Gardner, new president and chief executive officer of Ebasco Services, Inc.

Ebasco Names Two

Ebasco Services, Inc., engineering, construction, and business consulting subsidiary of Electric Bond & Share Co., New York, N. Y., has appointed Frederick C. Gardner president and chief executive officer of the firm. At the same time, T. C. Wescott, former president and director of Ebasco, was named vice chairman of the board.

Mr. Gardner, associated with Ebasco since 1917, is also a vice president of Ebasco de Venezuela, Ebasco Engineering Corp., and a director of Overseas Consultants, Inc.

President and director of Ebasco since 1945, Mr. Wescott joined the Electric Bond & Share Co. in 1911, and is now a director of that company.

Two Take Over New Duties As Corps District Chiefs

Appointments of two new district engineers for the U. S. Army Corps of Engineers have become effective. Col. Stephen E. Smith has assumed his duties as district engineer at Baltimore, Md., and Col. Willard P. McCrone has taken over as district engineer of the Galveston, Texas, district.

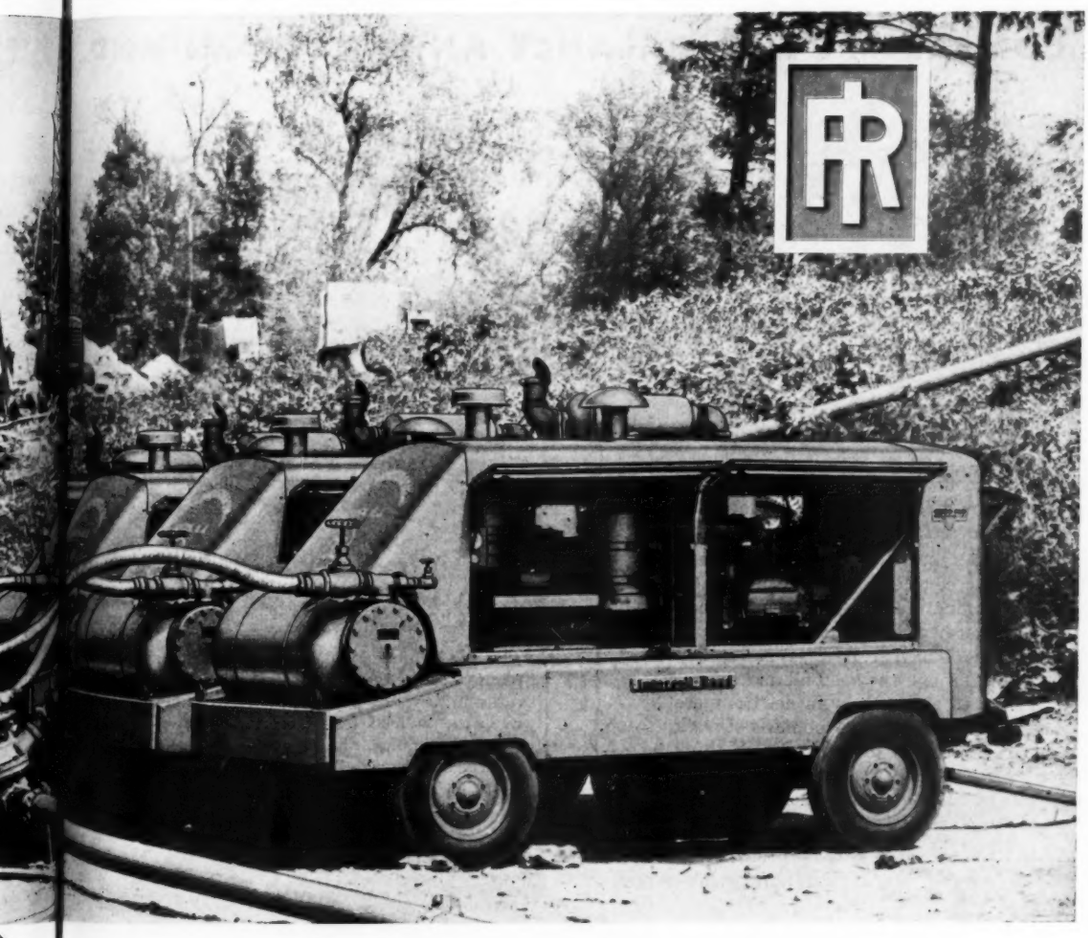
Col. Smith, a graduate of the U. S. Military Academy at West Point, has been an officer with the corps since 1936. In his new position, he succeeds Col. Reginald Whitaker, who has retired from active service.

A graduate of the Armed Forces Staff College, Col. McCrone holds bachelor and master's degrees in civil engineering. He served the Corps of Engineers in the European Theatre during World War II.

Col. Philip Baker Joins Bradberry & Associates

Col. Philip I. Baker, recently retired from army service, is now the head of the structural division of Carroll E. Bradberry & Associates, consulting engineers of Los Altos, Calif.

Col. Baker, with a wide background of experience in all types of steel, reinforced-concrete, masonry, and timber structures, is the designer of the Western Freight Terminal Building in Los Angeles, the Lagunita Court at Stanford University, the United Artists Theater in Long Beach, and the Jobbers Overall Manufacturing Co. building in Lynchburg, Va., among many others. From 1940 until July of this year, he was on active army duty.



By early 1955, you'll be able to drive from New York City to Buffalo—without a single traffic light or stop sign. That's the fabulous New York Thruway, a dream that I-R Air Power is helping to carve out of rugged terrain where many sections are solid rock.

One hundred seventeen GYRO-FLO rotary compressors, with a combined capacity of 61,265 cubic feet of air per minute, are speeding the job to completion—driving Ingersoll-Rand rock drills and other pneumatic equipment on this high-speed construction project.

Here, where sustained drilling speed and uninterrupted production are of particular urgency, the simplicity and dependability of the GYRO-FLO design really pay off. The GYRO-FLO rotary sliding vane compressor has no valves, pistons, rings, rods or clutches to wear out, adjust or replace. It delivers an abundant supply of oil-free air at temperatures that never go above 200 F. And pressure is automatically controlled closely and smoothly all the way from 0 to 100% capacity.

Available in 125, 210, 315 and 600 cfm, GYRO-FLO offers the only complete line of rotary portables—each size proven by years of heavy duty in the field. Get the complete GYRO-FLO story from your nearest Ingersoll-Rand distributor or branch office. It will save you money now and for many years to come.

2-94

CONTRACTORS' COMBINATION

Ingersoll-Rand

11 Broadway, New York 4. N. Y.

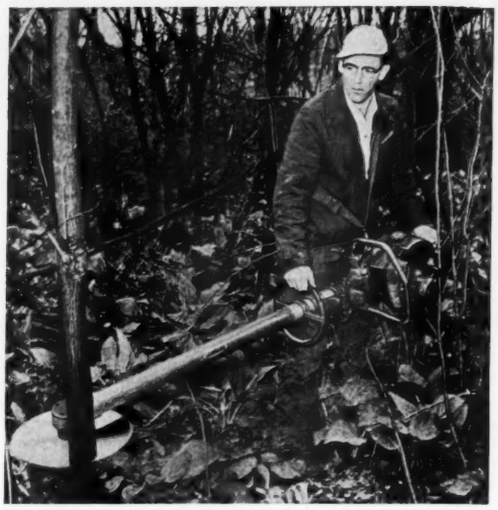
COMPRESSORS • ROCK DRILLS • AIR TOOLS • CARSET JACKBITS • PUMPS

Folder Describes Fast Foundation Form System

■ A new brochure shows a concrete-foundation forming system offered by Simplex Forms System, Inc., 2500 N. Main St., Rockford, Ill. Simplex forms consist of interlocking hardware that is mounted on 1⅛-inch plywood forms. The literature shows the forms being set up by three men for an 8 x 120-foot foundation in about 1½ hours.

The system includes 2 x 8-foot sidewall panels, fillers, inside and outside corners, foot-scaffolding brackets, corners for offsets, and line-up rails. Standard tie rods are available for 8, 10, and 12-inch walls, as well as spiral sizes.

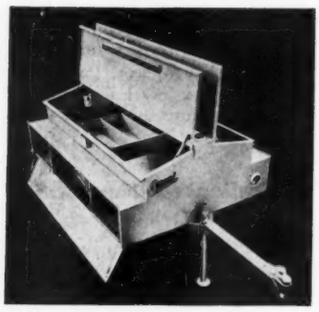
To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 424.



THIS ATTACHMENT for standard Lombard Models 30, 35, 3A, or 3½D chain saw makes a portable brush cutter that is carried in a sling from the operator's shoulder. Other advantages are the quick changeover from a brush cutter to a chain saw, and the low initial investment in the Lombard saw-cutter, as compared to the cost of two separate units. For details circle No. 372 on card at page 18, or write to the Lombard Governor Corp., Ashland, Mass.

Tire-Mounted Tool Box Discourages Tampering

■ A tamperproof pneumatic-tire all-steel tool box, with a storage capacity of 30½ cubic feet, is announced by Aeroil Products Co., Inc., 43 Wesley St., South Hackensack, N. J. The tool case, with a capacity of 2,000 pounds, has side compartments, an internal sliding tray, and front and rear drop legs with pads. All of these, as well as the wheels, lock from the inside of the box by one of two independent locks.



Double locking by two independent tumbler locks makes the new Aeroil tool trailer safe from tampering.

Standard safety equipment includes two battery-operated red flasher lights, front and rear reflectors, and a license-plate tail light.

For further information write to the company, or use the Request Card at page 18. Circle No. 345.

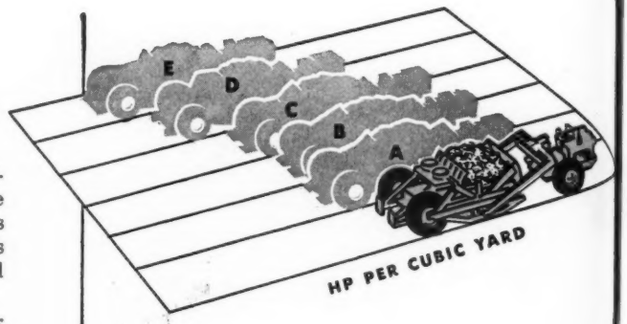
Publish Bibliography On Prestressed Concrete

A "Bibliography on Prestressed Concrete", published by the American Concrete Institute, lists 2,000 American and foreign literature references on prestressed concrete which have been published from 1896 to 1953. In a separate section of the comprehensive publication, 60 U. S., British, German, and French patents are listed.

Prepared as part of the work of ACI-ASCE Committee on Prestressed Reinforced Concrete, the booklet is 8½ x 11 inches in size and is punched near the binding so that it can be slipped into a looseleaf notebook. Copies are $2 each and may be ordered from the American Concrete Institute, 18263 W. McNichols Road, Detroit 19, Mich.

COMPARE POWER, BALANCE AND TRACTION AND

Why Allis-Chalmers Motor Scrapers



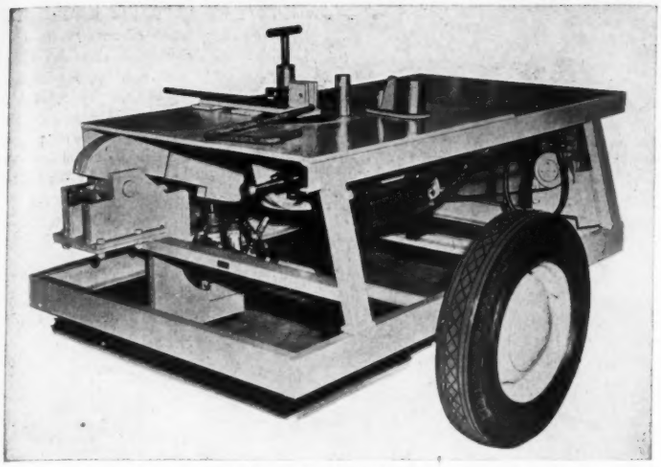
Examine the Allis-Chalmers TS-200 or TS-300 Motor Scraper point by point, feature by feature. Then let your Allis-Chalmers dealer demonstrate what these features mean to you in terms of bonus yardage and dependable performance.

See how fast Allis-Chalmers Motor Scrapers accelerate to "get the jump" on normal production from the moment they leave the pusher. See how safely they high-ball with a full load . . . how fast and steady they pull through the deep fill and return, up grade, to start a new cycle. Compare these Motor Scrapers on the basis of work done per dollar of investment. We think you'll agree an Allis-Chalmers Motor Scraper is your *number one* earth-moving value.

ACCELERATES FAST

The TS-200 develops 17.6 hp per cu yd struck capacity . . . the TS-300 develops 20—the highest ratios in their respective classes. With more power to move the payload, these machines get away from the pusher *fast* and maintain high average speeds throughout the entire cycle.

PERFORMANCE MAKES DOLLARS WHEN DESIGN



The use of hydraulic power and job-to-job portability are features of the Iron Man rod bender and shear.

Rod Bender and Shear Uses Hydraulic Power

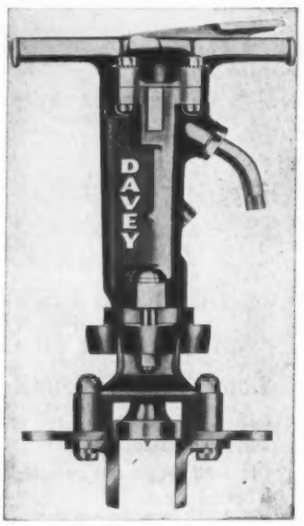
■ A trailer-mounted hydraulic machine that is both a rod bender and shear is announced by Acme Equipment, Inc., Central Trust Bldg., Altoona, Pa. The Iron Man machine, which can be hauled from job to job behind a light truck, handles deformed bars of intermediate grade steel up to No. 11, 1¼ inches. It can put two bends at a time into stock up to 1-inch round, or form five ¼-inch or ⅜-inch rods. The machine shears 3 such rods in one operation. According to the manufacturer, as much as 6 tons of large reinforcing bars can be bent in an hour.

Three-and-one-half-inch hydraulic rams actuate the Iron Man's bending apparatus and shear. A shut-off control rod geared to the hydraulic rams may be set for any 5-degree angle up to 180 degrees, so that it automatically releases the pressure at the desired bend.

For further information write to the company, or use the Request Card at page 18. Circle No. 487.

New Sheeting Driver

■ A new heavy-duty sheeting driver is announced by Davey Compressor Co., N. Water St., Kent, Ohio. Known as Model DSD-90, it is said to be highly effective for driving wood sheeting into ground formations such as clay, sand, and gravel. It can also be employed for driving light steel piling.



The Davey DSD-90 sheeting driver.

The driver consists of a Davey DB-90 paving breaker with an SD-90 sheeting-driver attachment. Features include the Davey Rocket valve with double-trip ports for positive piston hammer action.

Net weight of the Model DSD-90 driver is 125 pounds. It is 28½ inches long, 15½ inches wide, and 7 inches deep. The SD-90 attachment weighs 70 pounds. The unit will handle sheeting of 2, 2½, and 3-inch sizes.

For further information write to the company, or use the Request Card at page 18. Circle No. 354.

Forced-Hot-Air Heaters For Winter Construction

■ A new booklet from Herman Nelson, Moline, Ill., shows how forced-hot-air heaters help the contractor to keep up with winter construction schedules. Specific examples are cited that explain how the heaters keep workmen, materials, and machinery on the job.

The booklet emphasizes that because the heat is forced heat and is also directed through ducts, it gets to hard-to-reach areas. Other features of the Herman Nelson heaters include automatic temperature control, a safety shutoff valve, metered fuel flow, and an enclosed combustion chamber. Models offered include electric and gasoline-powered units, the latter using either gasoline or kerosene fuel. Capacities range from 125 000 to 450,000 Btu.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 447.

YOU'LL SEE

Out-produce

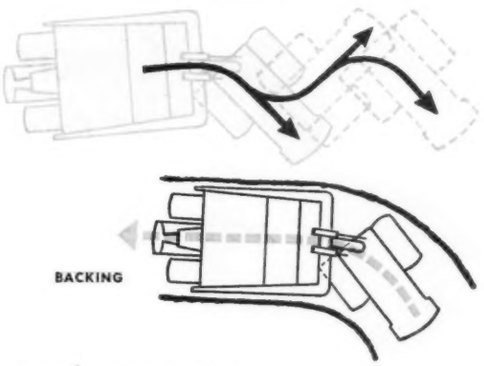
WEIGHT DISTRIBUTION LOADED

50 PERCENT 50 PERCENT

HIGHBALLS WITH THE PAYLOAD SAFELY

Loaded, the Allis-Chalmers Motor Scraper has equal weight on all four tires. This ideal weight distribution, together with low center of gravity, direct hydraulic steering which eliminates jackknifing, and big air brakes on all four wheels, allows the Allis-Chalmers Motor Scraper to take advantage of its high hp ratios by maintaining fast, yet safe haul speeds.

DUCK-WALKING



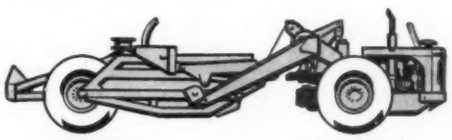
MANEUVERS EASILY

There are no steering brakes to rob you of tractive power. Instead, direct hydraulic rams turn the tractor in the desired direction of travel. Steering is sure and positive—even going down extremely steep slopes in loose footing.

By swinging tractor left and right with the steering rams, the Allis-Chalmers Motor Scraper can duck-walk through heavy going where others bog down.

Backing up in close quarters is simple. Two-wheel tractor has complete control over scraper body . . . can even change directions without forward or backward movement.

WEIGHT DISTRIBUTION EMPTY



34 PERCENT 66 PERCENT

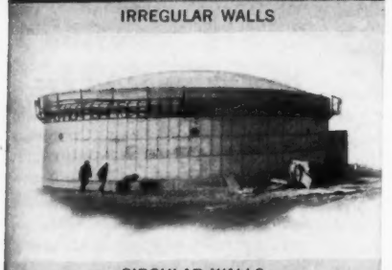
COMPLETES THE ROUND TRIP QUICKLY

The return trip from the fill is usually uphill. That's where two-wheel design pays off. When empty, 66 percent of the Motor Scraper's weight is carried on the traction wheels. There are no front wheels to rob drive wheels of tractive weight or to create rolling resistance in heavy going. This enables the Motor Scraper to make the round trip faster and usually in higher gear than other units.

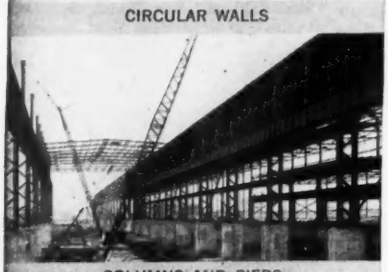
MAKES SENSE

ALLIS-CHALMERS
TRACTOR DIVISION • MILWAUKEE 1, U. S. A.

IRREGULAR WALLS



CIRCULAR WALLS



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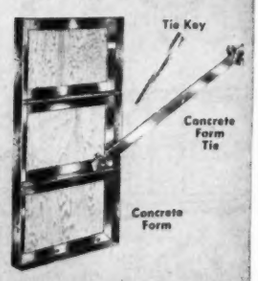

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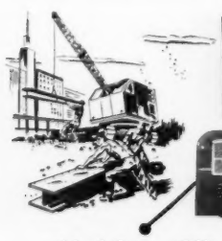

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A Schield Bantam crane mounted on a White army half-track excavates sticky wet soil for a drainage structure. Equipped with backhoe attachment and mole's paw, this rig proved particularly useful in cleaning up around piling before footings were placed.
C&E Staff Photo

Suspended Forms Simplify Concrete Work on Overpass

Hanger attachment eliminates need for scaffolding in forming deck for 4,420-foot elevated roadway

CONCRETE WORK on the deck of the S. Claiborne Street Overpass in New Orleans, La., has been a fast and relatively simple operation, thanks to the use of suspended deck forms. Use of these time and labor-saving devices has been one of the outstanding features of an extensive elevated roadway project.

Planned as another step in eliminating railroad-highway grade crossings in New Orleans, the overpass is one of a series of 21 grade separations being built as part of the Union Passenger Terminal program. Fourteen of the structures have been built, and most of the remaining seven are under construction. The S. Claiborne structure is scheduled for completion in December.

Farnsworth & Chambers Co., Inc., Houston, Texas, and New Orleans, is building the overpass, which consists of two parallel structures, each carrying a 40-foot roadway. In order to maintain traffic on the busy street below, one-half of the bridge was built at a time. Traffic was routed over the completed first section while the contractor closed the old road and constructed the second section of the overpass.

Until this year, New Orleans had been served by five independent railroad stations scattered around the city. Tracks of the several railroads crossed and recrossed city streets in a maze which inevitably created traffic delays and accident potential. Through many years of negotiation and planning, a single Union Passenger Terminal to serve all the railroads was conceived, planned, and constructed. Early this year it went into operation.

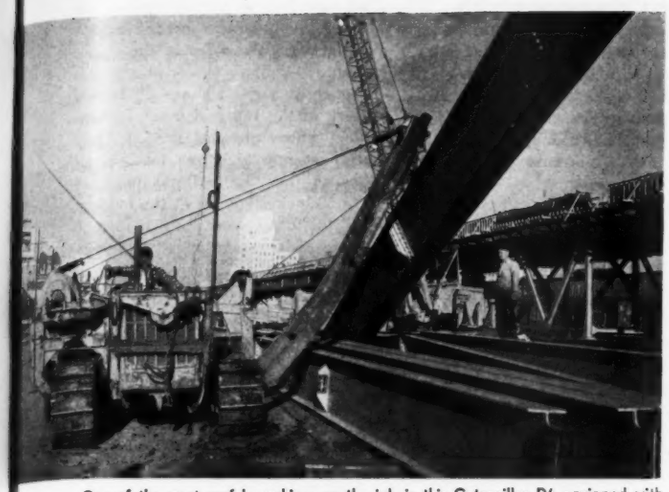
Bringing all the passenger trains into one terminal eliminated the necessity for many of the tracks, thus very materially reducing the number of dangerous grade crossings. The next logical step was the separation of grades of principal streets and the main rail lines leading to the new terminal. This step was mapped in a joint program, involving city, state, and federal governments and the railroads, for the construction of the 21 grade separation structures of which the S. Claiborne Street Overpass is the largest.

Spans Several Streets

Starting at Melpomene Street on the west, the structure carries S. Claiborne Street over streets and tracks for 4,420 feet, returning to grade again at Gravier Street. In addition to the Union Passenger Terminal tracks, the structure passes over six other railroad spurs, Poydras Street, Caliope Street, and several lesser streets. Provision has been made at the east end of the overpass for future extensions in this direction.

Access to Poydras Street is pro-

This pedestal form is made of tongue-and-groove lumber backed by horizontal studs. Where the long studs overlap at the corners, a vertical 4 x 4 wale is held in place with Richmond continuously-threaded rods. Here workmen tighten nuts on the rods.



One of the most useful machines on the job is this Caterpillar D6 equipped with Cat sideboom. A familiar machine on pipeline jobs, it proved versatile on this project as a material-handling rig. Here it picks up one of the steel deck girders.

vided by a pair of center ramps which will accommodate vehicles leaving as well as entering the elevated roadway. Other ramps and approach lanes for connections to the proposed Ponchartrain Expressway are being blocked out and left unfinished in the present construction. The Ponchartrain Expressway, slicing across the city in a north-south direction, will cross over the Claiborne Overpass near the center of the structure. Pedestals for three of the expressway bents were poured as a part of the overpass contract.

The typical deck of the overpass consists of two 40-foot roadways separated by a median 4 feet wide. On the outer edges are 18-inch-wide sidewalks and 15-inch-wide concrete parapets topped with aluminum handrails. The cross section varies widely from one end to the other because of the many ramps and approach lanes. Structural steel bents support the deck, which is composed of steel girders and a concrete slab. Bents rest on concrete pedestals which are founded on untreated timber piles.

Steel Girders

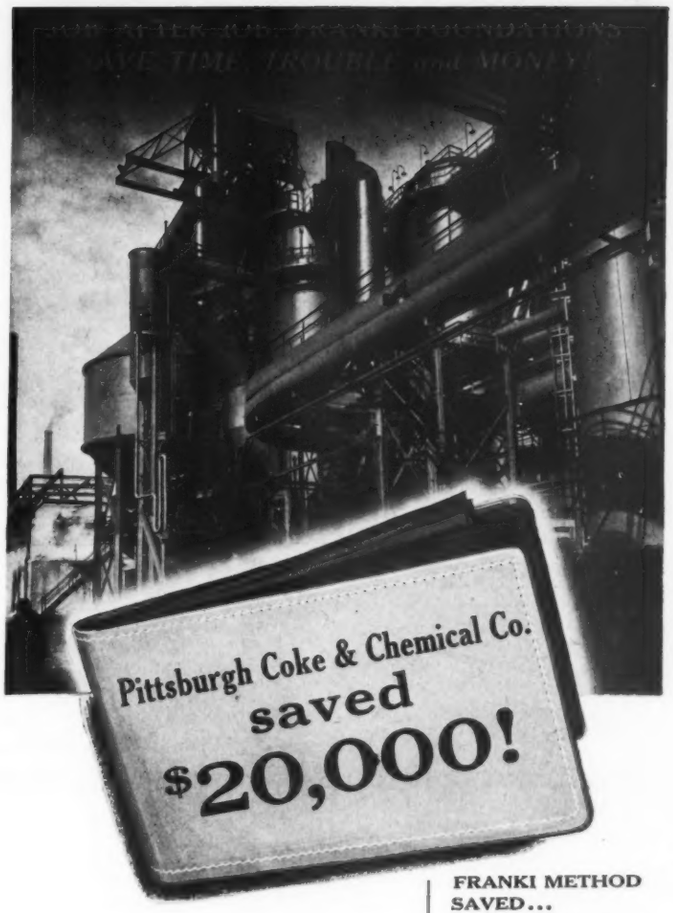
Rolled sections make up the girders for the typical 28-foot spans, while the longer spans over railroad and major streets are plate girders. The 100-foot girders spanning the Union Passenger Terminal tracks are the longest and heaviest on the job. Girders 82 feet long span Caliope Street, and spans of 74 and 82 feet carry the overpass over the double roadways of Poydras Street.

The American Bridge Co., Pittsburgh, Pa., fabricated the structural steel in plants at Memphis, Tenn., and Birmingham, Ala. Steel from Memphis was shipped to New Orleans by barge and trucked from the wharf to the job site. Steel from Birmingham came directly by rail to a siding adjacent to the job. Farnsworth & Chambers erected the steel with its own forces, using a Koehring 605 crane with a 60-foot boom and 15-foot jib. A Lorain truck crane assisted the Koehring on some of the heavy girders. The 100-foot girders spanning the railroad weighed up to 35 tons. The two cranes picked up these heavy girders and walked down the track to place them.

Although not usually found on structural jobs, a Caterpillar D6 tractor with a Cat sideboom (the typical pipe-laying machine) proved exceptionally useful. Between sorting and transporting structural steel, hauling piling, setting heavy form sections, and a multitude of other jobs, this machine was never idle. One of its many jobs was the sorting of the structural steel which was

(Continued on next page)

Deck forms are supported from the top flange of the girders by Richmond hanger frames. A lag screw fits between the joists, passes through the coil of the hanger frame, and is held by a nut on the top.



On the construction of a blast furnace foundation for Pittsburgh Coke & Chemical Co. at Neville Island, the use of Franki Displacement Caissons permitted a substantial increase in allowable load. Specifications called for 35-ton friction piles approximately 40 feet long.

Franki proposed a 70-ton minimum load. A 13-foot Franki Displacement Caisson, under a 200-ton test load, showed only a gross settlement of 0.18 inches. *Net settlement was only 0.03 inches!* Accordingly, design load was increased to 100 tons, and 274 Franki Displacement Caissons were installed. Results — *the contractor saved valuable time* and *the owner saved $20,000!*

Write to Franki Foundation Co., 114 E. 40th St., N. Y., for brochure describing Franki Methods and "Franki Facts" on this job.

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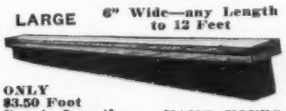

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The Link-Belt crane delivers concrete to the deck of the overpass in a Johnson 1-yard bucket. After the concrete is spread and vibrated, it is screeded off with the steel strikeoff at the right. Hand finishing operations follow.

(Continued from preceding page)

stockpiled on or near the job site, and transporting the pieces from stockpile to point of erection. Of the 10,534,554 pounds of structural steel used, more than a million pounds is represented by high-tensile silicon steel columns and cover plates.

Pile Foundations

Laminations of sand, silt, gumbo, and clay make up the typical delta subsoils underlying the project. Untreated fir timber piles were driven to bearing in a deep stratum, with piling lengths ranging from 32 to 92 feet. The 6,700 piles driven totaled 395,100 linear feet, or an average of almost 60 feet per pile.

For driving the piling F&C used three skid rigs with stationary leads and one turntable rig. Clyde 3-drum steam hoists powered by 60-hp Dutton boilers operated the rigs. Vulcan No. 1 hammers drove the long piles, and a Vulcan No. 2 was used on the shorter lengths. Gorman-Rupp jet pumps taking water from the municipal supply assisted in getting the longer piles down to bearing in the proper strata. All piles were first driven to ground level by the hammers. Pipe casing followers 12 inches in diameter were then attached and the piles driven on down to cutoff elevation about 10 feet below ground surface. Pile cutoffs were made with electric chain saws powered by Homelite generators.

After the piling was driven, two Koehring 605 cranes and a Unit 1020 crane, using Hendrix and Blaw-Knox clamshell buckets, excavated for the footings. These machines dug down to the tops of the piling and cleaned out around the outside of the groups of piles, but their buckets were too large to get the material lying between the piles. For this job, a Schield Bantam backhoe was fitted with a mole's paw just 14 inches wide. This rig was so effective in removing the dirt from between the piles that no hand work was necessary to prepare the excavation for placing the footing. Equipped with dragline and clamshell, the Bantam, which was mounted on a White army half-track, was also kept busy on drainage and other excavation.

Footing excavations were made without sheathing except for a very few footings adjacent to the Terminal and Illinois Central tracks. In these cases, the sheating was driven by a drop hammer from swinging leads handled by a Koehring 605 crane. The clay soil stood up well, and although pile cutoff elevation was 8 feet below mean Gulf level, there was relatively little seepage into the excavations. A 1½-inch Gorman-Rupp centrifugal pump and a Novo double-diaphragm pump removed what surface water and seepage got into the excavations. After pedestals were placed and forms removed, the backfill was thoroughly tamped with pneumatic tampers powered by a Chicago Pneumatic compressor.

Forms Used Many Times

Form panels for footings and pedestals were very well designed and constructed, with the result that they were re-used as many as 40 to 45 times. Footing form panels consisted of horizontal 2-inch tongue-and-groove sheathing securely nailed to 2 x 6 studs. These panels were set up around the piles and braced externally against the sides of the excavation.

Concrete pedestals are 30 inches square at the top and extend about 2 feet above ground level. They batter at one inch per foot on all sides so that the bottoms measure 45 to 53 inches square at the footing. Pedestal forms were built of 2-inch tongue-and-groove sheathing running vertically. Horizontal 2 x 6 studs overlapped the sheathing 10 to 12 inches on each end, and were staggered so the extensions overlapped each other when the form was assembled. When the form panels were set up, a vertical 4 x 4 wale was set into the angle formed by the projecting studs on each corner.

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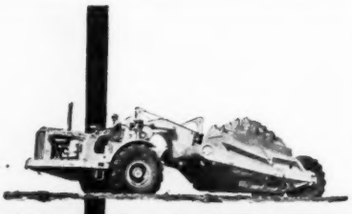

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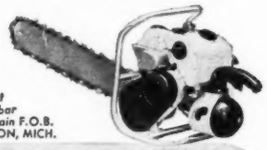

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tie rods fitted with 3-inch-square plate washers at each end were threaded through holes in the 4 x 4 wales in both directions. Tightening up these rods held the form rigidly in place. The only nails needed to assemble these forms were a few used to hold the panels temporarily in place while the wales and tie rods were being placed. Since there were no internal form ties, there was nothing to be left in the concrete. To wreck the forms, it was necessary simply to remove the threaded rods and pick off the wales and form panels. To produce a smooth finish on the portion projecting above ground, the upper 4 feet of the form panels was lined with ¼-inch tempered Masonite.

Deck Forms

Forms for the concrete deck slab were suspended entirely from the upper flange of the girders, making it possible to make all adjustments of the form from the deck and eliminating the necessity of any scaffold for erecting the forms. Richmond hanger frames rested across the flange of each girder, projecting just enough on each side of the flange to receive a lag screw. The ½-inch lag screws were 14 inches long and fitted with 3-inch-square plate washers at the bottom to support double 2 x 6 wales. The lag screws passed through the hanger coil and were secured by a nut on the top of the hanger. Two by four joists rested on the 2 x 6 wales and supported the ¾-inch plywood floor of the form.

At each side of the panel a 1 x 10 board supported on 2 x 3 joists was fitted under the flange of the girder and allowed to project out under the plywood. This board was notched to slip over the lag screws. When the form was assembled, the lag screws were fastened by tightening the nut on top of the hanger frame. This pulled the form up snugly against the girder flange. To dismantle the forms, the lag screws were unscrewed from below, releasing the form and leaving the nut and hanger in the concrete. The speed of assembly, ease of adjustment from the deck, and absence of scaffolding more than compensate for the costs of the hangers and nuts.

To support the form for the handrail parapet which overhangs the outside girders, 8 x 8 timbers were hung from the bottom flanges of the outer two girders at 4-foot intervals. The Caterpillar D6 tractor with sideboom was fitted with a pipe extension to lift these timbers and hold them in place while they were being attached. The balance of the parapet form was built up of standard panels supported and braced from the timbers.

Ready-Mix Concrete

Reinforcing steel for the deck was hoisted up onto the structure by a crane and tied in place after forms were completed. Steel was held up off the forms on galvanized chairs. Orleans Materials and Equipment Co., Inc., New Orleans, supplied and fabricated the 2,439,742 pounds of reinforcing steel which went into the structure.

The ready-mix concrete plant of Jahncke Service, Inc., is located within about a block of the overpass. This plant supplied nearly 20,000 cubic yards of structural concrete for the bridge. By special arrangement, the sand, gravel, and cement for use on this project were all inspected and then stored so as to be kept separate from materials used in the other operations of the plant. Through very close co-ordination between the contractor and the ready-mix plant, a satisfactory quality control was maintained and concrete was supplied at such times and in the quantities required.

The concrete mix for Class A structural concrete was based on these proportions:

Cement	94 lbs. (one sack)
Sand	211 lbs.
Gravel	317 lbs.
Water	5.5 gals.

No admixtures were used. Slump of the concrete for deck pours was approximately 2½ inches, and compressive strength of cylinders averaged about 5,000 psi.

Most of the concrete for footings and pedestals was chuted directly from the truck-mixers into the forms. For the deck pours, the ready-mix trucks dumped the concrete into bottom-dump buckets which were hoisted to the deck by a Link-Belt Speeder crane. One of the buckets was made in the F&C shops and had a capacity of ½ yard. The other was a 1-yard Johnson bucket. The 75-foot boom and 25-foot jib of the Link-Belt crane enabled it to reach over the entire deck area with the concrete buckets from a setting on one side of the bridge.

Finishing and Curing

Pipe screeds which controlled the deck strikeoff were supported from the same hanger frames which held the forms up. As the concrete was placed on the deck, it was leveled off by hand and vibrated by a Chicago Pneumatic electric vibrator powered by a Homelite generator. A crew of workmen then screeded the surface with a long steel strikeoff riding on the pipe screeds. Final straight-edging and finishing were done by hand.

As soon as possible after the finishing operations were completed, all exposed surfaces of the concrete were covered with wet burlap for curing. Forms on parapet walls were removed 24 hours after the concrete had been placed and the exposed surfaces were finished by rubbing with hand stones. The aluminum handrail on the parapet was furnished by Houston Iron & Steel Co., Houston, Texas, and was installed after the concrete deck for one-half of the bridge had been completed.

it takes a GIANT to drive GIANT PILES

Take a look at one of the heaviest ram pile hammers ever built and you will get a good idea of its driving power. This McKiernan-Terry S-14 Single-Acting Pile Hammer was used to drive 192-ft steel H-beam piles to 85 feet under water in the construction of the Potomac River Bridge at Ludlow Ferry, Md.

There are, of course, good reasons why this giant McKiernan-Terry Hammer was selected by Merritt-Chapman & Scott Corp., the contractor. (1) This S-14 hammer has exceptional power and capacity. It delivers a 37,250 foot-pound blow at 60 blows per minute. (2) McKiernan-Terry manufactures the only single-acting hammers that can perform underwater work. This makes possible the use of shorter piles . . . saves labor, time and material. (3) The hammer is completely protected from sand, grit and foreign matter. (4) There are no exposed working parts, reducing hazards to workers.

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This giant McKiernan-Terry S-14 Single-Acting Hammer is built to drive long-length piles. The total weight of the hammer and anvil is 31,800 pounds. Ram alone 14,000 pounds. Overall height is 16 feet 7 inches.

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Mercury-vapor lighting will be installed on the structure by Walter J. Barnes, New Orleans electrical contractor, under a subcontract from F&C. Crescent City Plumbing and Heating Co., also of New Orleans, is installing all pipe work in connection with the drainage on the overpass. In this work, the subcontractor is using a Ramset powder-actuated tool to set 3/16-inch studs into the steel columns for attaching the drain pipe. Painting was sublet to Frank J. Matthews Co., New Orleans.

Personnel

The S. Claiborne Street Overpass was designed for the Louisiana State Department of Highways and the City of New Orleans by Masters and Henderlite, consulting engineers, New Orleans, La. Supervision of construction was handled by the highway department with George F. Stevenson, assistant construction engineer, in charge of the project. Assisting him as project engineer was J. G. Wenn, Jr.

Supervising the project for Farnsworth & Chambers was Don Snow, superintendent. He was assisted by Ross Finke as engineer and A. M. Matthew as assistant superintendent. This project was started in July, 1952, and the first half of the structure was opened to traffic this April. The entire structure is scheduled for completion by the end of this year.

THE END

New Front-End Loader

■ A new hydraulic loader, with an 11-cubic-foot capacity and capable of working with live loads up to 1,500 pounds, is announced by the Wagner Iron Works, 1905 S. First St., Milwaukee 1, Wis. The Model WMD5-Super front-end loader is equipped with twin self-equalizing dump cylinders and down-pressure side cylinders on the dipper stick. A wide range of material-handling attachments are available as optional equipment.

The Wagner Model WMD5-Super hydraulically controlled loader.

Two new features are quick-disconnect coupling, permitting the drive shaft to revolve without operating the pump, and a new multi-purpose duplex valve used as single-acting, double-single, or double-double as required. It is rated at 15 gpm with a maximum pressure rating of 200 psi.

Tractors fitted include the Ferguson TO-20, TO-30, and TEA-20; and the Ford 8N, 9N, and NAA units.

For further information write to the company, or use the Request Card that is bound in at page 18. Circle No. 412.

Expansion Joint Filler Has High Resiliency

■ A bituminous fiber expansion filler for concrete joints is described in a leaflet from the Celotex Corp., 120 S. LaSalle St., Chicago 3, Ill. The Flexcell expansion joint filler, which is made of Celotex cane fiber board impregnated with an asphaltic compound, is reported to re-expand to over 70 per cent of its original thickness after being compressed 50 per cent.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 399.

Importance of Filtering Engine Lubricating Oil

■ The fact that there are no short cuts to safe filtering of engine lubricating oil is emphasized in a new booklet published by Caterpillar Tractor Co., Peoria, Ill. This booklet discusses the risks involved in short cuts for lubricating oil-filter systems, and stresses the importance of using a filter made for your engine.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 417.

Power-Takeoff Drive For Tractor-Trailers

■ The new flexible-shaft power-takeoff drive for tractor trailers developed by Stow Mfg. Co., 906 Shear St., Binghamton, N. Y., is described in a new bulletin. This drive, consisting of a 1¼-inch flexible shaft in combination with a square telescopic rod and tube, does away with delicate and expensive power couplers. It is being used on dump trailers, and to pump petroleum, natural gas, etc.

To obtain Bulletin 542 write to the company, or use the Request Card at page 18. Circle No. 392.

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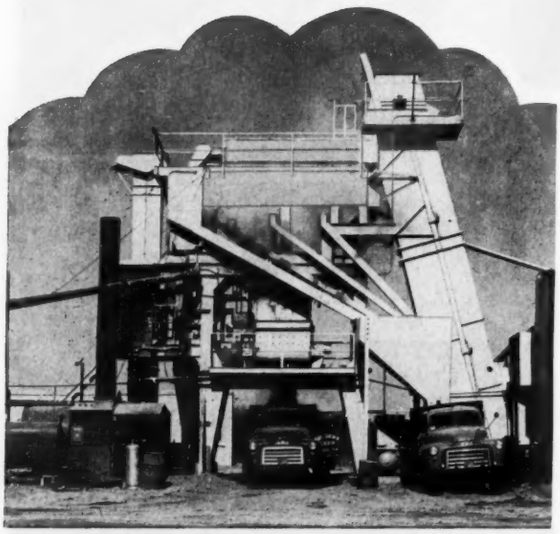

You can bid with confidence on today's highway and air base jobs when you have a MADSEN Model 481 Batch Capacity Asphalt Plant. This plant is a real money-maker. MADSEN engineers have incorporated more than 25 outstanding features in the Model 481 — to assure you of a faster charge-mix-discharge cycle, greater accessibility and easier and lower-cost maintenance . . . features that add up to more production per hour, day-after-day.

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Yes, any way you look at it — today or tomorrow — you're set for more profits with the MADSEN Model 481. Have your MADSEN Distributor give you all the facts soon.

THE MADSEN MODEL 481 IS TODAY'S BIG NEWS IN THE ASPHALT PAVING INDUSTRY. HERE ARE SOME OF THE FEATURES OF THIS OUTSTANDING PLANT:

- Exclusive bin design (Patent Pending)...eliminates segregation, provides uniform aggregate withdrawal, and promotes improved aggregate distribution in weigh-box.
- Oversize capacity weigh-box . . . with air-operated gate, 4-point lever suspension, roller-mounted so that it may be quickly rolled out of the way for field maintenance.
- New MADSEN Model 440 Twin-Shaft Pug Mill Mixer (Patent Pending)...with improved mixing action, faster discharge, built-in oversize capacity and precision-ground, externally removable sectional liners.

STAY MODERN WITH MADSEN

Write today for full details on the MADSEN Model 481 . . . the asphalt plant that keeps pace with your production needs.

MADSEN Equipment that Serves ®

MADSEN IRON WORKS, INC.

14100 EAST ROSECRANS AVENUE, P. O. BOX 38, LA MIRADA, CALIFORNIA

Vulcan Tools

— FOR —

Rock Drills, Pavement Breakers and Clay Diggers

Vulcan Tool Manufacturing Co.

35-43 Liberty Street, Quincy 69, Mass.

Branch Offices and Warehouse Stock.

57 Leonard St. 34 No. Clinton St.

New York 13, N. Y. Chicago 6, Ill.

Send for catalog or see your local distributor.

A short turning radius of 11 feet 8 inches is provided by the rear-wheel steering of the new Lessmann Loadall Model GFT loader.

Welding Rod Repairs Cast-Manganese Steel

■ A new manganese-nickel steel welding rod for repairing or building up worn or broken manganese steel castings is announced by Wall Colmonoy Corp., 19345 John R St., Detroit 3, Mich. The welding rod can also be used as a buildup material prior to applying Colmonoy hardfacing alloys to manganese steel parts.

The new material, Walmang, has been developed to provide an austenitic manganese steel welding rod that produces weld metal having the same manganese content, work hardenability, and wear resistance as cast 12 per cent manganese steel.

Walmang welding rod is available in ¼, 3/16, 5/32, and ⅛-inch-diameter bare and coated rods. Bare rods are 18 inches long, and coated rods are 14 inches long.

For further information write to the company, or use the Request Card at page 18. Circle No. 390.

Power-Belt Transmissions

■ A new bulletin which covers the complete line of power-belt transmission equipment made by the American Pulley Co., 4200 Wissahickon Ave., Philadelphia 29, Pa., is available. It includes brief descriptions of American's Wedgebelt drives, Shaft-King speed-reduction drives, adjustable-speed sheaves, steel split pulleys, and conveyor pulleys, among other transmission products.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 346.

Tractor-Loader Has Front-Wheel Drive, Rear-Wheel Steering

■ A new ¾-yard tractor-loader featuring front-wheel drive and rear-wheel steering is announced by the Lessmann Mfg. Co., 20th and Easton Blvd., Des Moines 4, Iowa. The Lessmann Model GFT Loadall loader has a special crowd feature that allows the operator to fill the bucket without forward movement of the tractor. Four-wheel brakes, which are standard equipment, hold the tractor when the bucket is being forced into hard material.

The loader has full reversing in any speed range from 2 to 20 mph. A torque converter with heat exchanger multiplies engine torque and cushions the shock on the power train.

Capacity of the bucket is 22 cubic feet measured struck and 28 cubic feet heaped. Other attachments include snow and trash buckets, lift forks, a dozer blade, a crane hook, and a tine fork.

For further information write to the company, or use the Request Card at page 18. Circle No. 415.

Transits and Levels

■ A line of transits and levels made by the Buff & Buff Mfg. Co., 329 Lamartine St., Jamaica Plains 30, Mass., is illustrated in literature available on request. Buff transits and levels are offered in several models with 6¼ or 5½-inch horizontal plates. The Buff stadia circle is optional equipment on these instruments.

Dumpy and wye levels in 14, 15, 18, and 22-inch sizes are also offered.

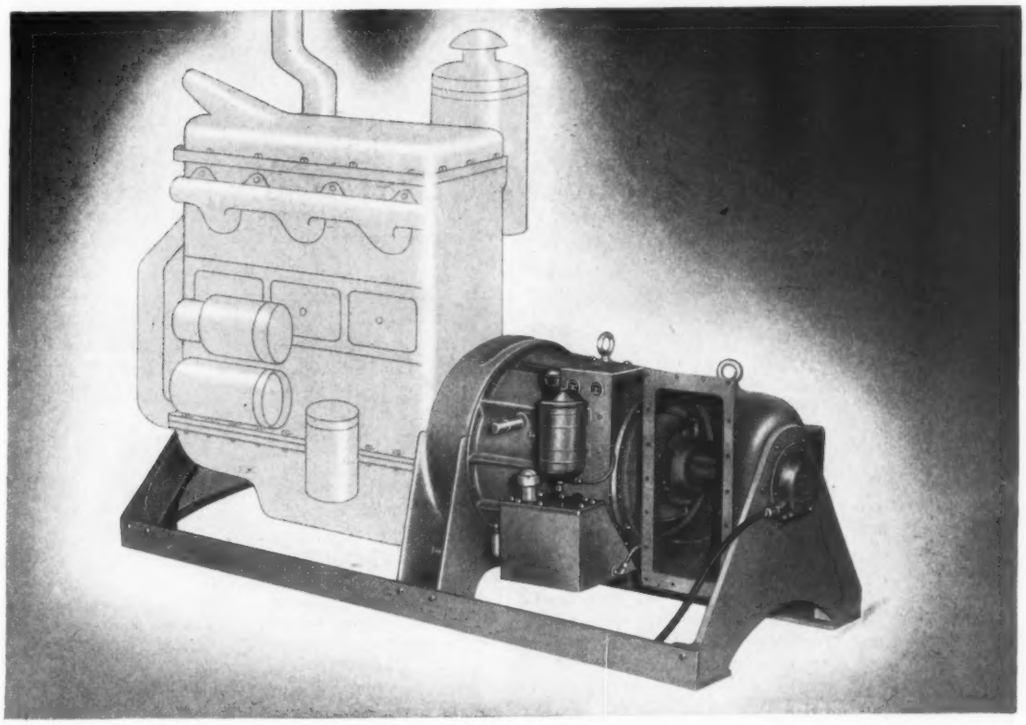
To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 465.

The Indispensable
DISPENSER

New Dispenser for Air Entraining Agents and Calcium Chloride

Write for New Folder

J-W MATERIALS, INC.
P. O. Box 288, Napoleon, Ohio



Up to 1/3 more work with Torque Converter Drive

A new power unit represents a major investment.

That's why it's so important that you get peak production and performance from it . . . with longest possible operating life . . . by equipping it with Torque Converter Drive.

With the Twin Disc Three-Stage Torque Converter design, here are a few of the advantages you will obtain: 1 Through *fluid* connection, with the *highest* torque multiplication available (up to 6:1 at stall), you'll *eliminate* overloading, lugging, or stalling. 2 Your engines will operate in *maximum* efficiency range at all times, with *more horsepower put to work.* 3 Power will *automatically* be matched to load demands. 4 Heavy loads will be picked up *smoothly,* without slipping the clutch. 5 Shock loads will be *absorbed,* saving engines, clutches, and drive line components. 6 With an *infinite* variety of ratios available, you'll get *accurate, positive* control . . . permitting delicate "inching" or "holding" under power.

Today, throughout the construction industry . . . on power shovels, draglines, cranes, hoists, crawler tractors, heavy-duty trucks, industrial locomotives . . . owners of powered equipment as well as major equipment manufacturers are proving the quickest way to increase production volume—speed work cycles, provide easier operation, and assure longer equipment life—is to install Twin Disc Torque Converter Drive.

Talk to your engine dealer—or write *now* to Twin Disc Clutch Company, Hydraulic Division, Rockford, Ill.—and get the *complete* story.

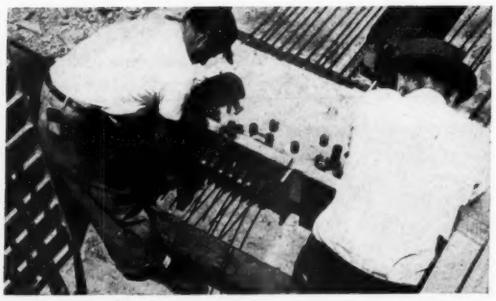
Three Series, or sizes, are provided —the 10,000, 11,500, and 16,000— with seven capacities in each size through internal blading variations. As a result, your power unit can be equipped with a Twin Disc Three-Stage Torque Converter with the *exact* horsepower capacity required for greatest possible efficiency.

TWIN DISC
TWIN DISC CLUTCH COMPANY, Racine, Wisconsin
Hydraulic Division, Rockford, Illinois

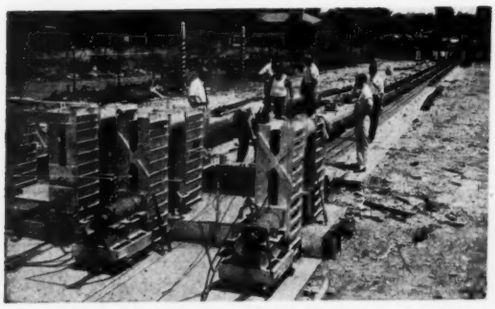
Deck Members for Wharf Are Precast, Prestressed

Pre-tensioning of concrete stringers ▼

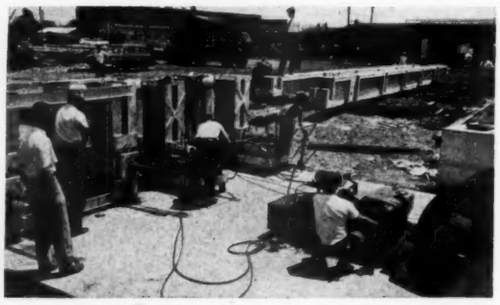
1. Workmen begin unreeling a strand of American wire which will be pulled down the 225-foot-long casting bed and anchored at both ends. Pine jacks tighten the strands. *C&E Staff Photo*



2. Strands of wire are passed through a steel plate at the dead end of the casting bed and anchored with a cone and jaw device. Wax paper in the cone reduces bond and speeds dismantling.



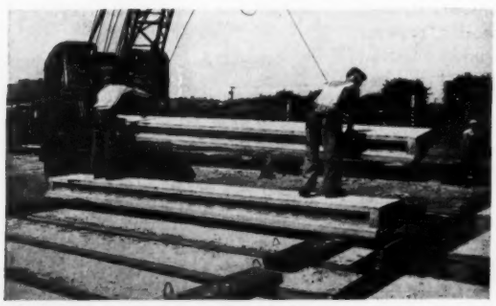
3. View showing the wire strands laid on the floor of the casting bed prior to the jacking operation. Side-form panels are being set in place. *C&E Staff Photo*



4. A Rodgers pump powered by a Wisconsin engine operates the two double-acting center-pull jacks as the wires are stressed. Jacking takes about ten minutes. *C&E Staff Photo*

5. With the wires stressed and supported at three levels by three-piece wooden end forms, concrete is chuted into the form and spread. A Vibro-Plus machine does the vibrating. *C&E Staff Photo*

6. Once the concrete has set, the wires are cut between the stringers. Here a workman removes the cone from the plate at the dead end of the casting bed. *C&E Staff Photo*



7. Here a Koehring truck crane stockpiles the finished stringers. Note the pre-tensioning wires that protrude from each end.

8. On either side of the Lincoln Tunnel ventilation building, the prestressed stringers are placed directly over the pile caps.

THE THIRD MAJOR USE of prestressed concrete on the New York City waterfront featured new methods of both pre-tensioning and post-tensioning. The deck of the new marginal wharf above the Lincoln Tunnel called for seven hundred pre-tensioned stringers 16 and 18 feet long and sixty-four post-tensioned girders 62 feet long.

Precrete, Inc., New York, N. Y., a supplier to Merritt-Chapman & Scott Corp., New York City, produced about twenty stringers and two girders a day. Stringers were pre-tensioned with twenty-four 7-wire strands of $\frac{5}{16}$-inch wire, and girders were post-tensioned with three 1⅛-inch Stressteel bars. Stringers are 29 inches wide at the base, 24 inches wide at the top, and 11 inches high. Girders are modified T-sections, 14 inches wide at the bottom, 21 inches wide at the top, and 30 inches deep.

All of the casting was done at a permanent prestressing yard set up by Precrete in Astoria, Long Island. The units were hauled by truck and trailer to a nearby wharf, loaded on barges, and carried over water to the site.

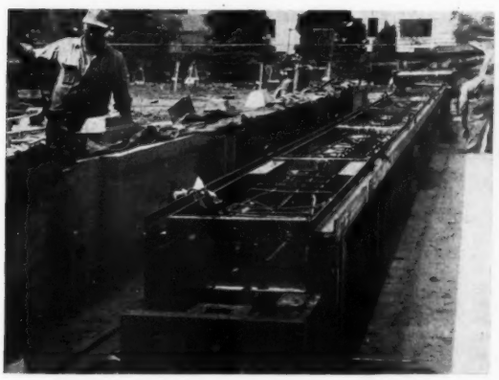
Pile-Supported Wharf

The marginal wharf was built for the Port of New York Authority, but will eventually be turned over to New York City's Department of Marine and Aviation.

Extending 100 feet beyond the existing bulkhead, the new wharf is an offshoot of construction work on the third tube of the Lincoln Tunnel, now under way. The wharf runs 442 feet from 38th to 40th Streets, and is designed to provide replacement berthing facilities for the time when existing Pier No. 78 is razed to make way for the new tube. It was built around the towering ventilation shafts and over the two existing tubes of the tunnel.

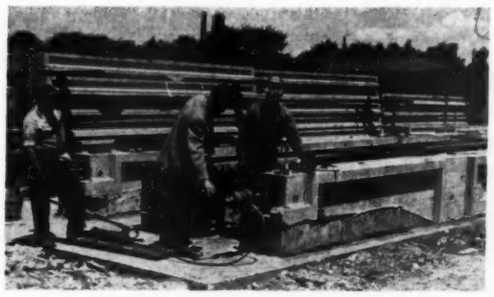
The design calls for 23 rows of 14-inch H-piles driven to bedrock and capped with poured-in-place concrete. Except for those flanking each side of the tunnel tubes, pile rows are about 18 feet apart. The pairs of piles that straddle each tube are 43 feet apart, leaving a central span between the tubes of 32 feet. The 62-foot post-tensioned deck girders are set side by side over the 43-foot spans and cantilevered on each end. The cantilever at the outer end is 11½ feet long. In the center span, pre-tensioned stringers are suspended between 7½-foot cantilevers. All other stringers span the pile caps on either side of the ventilation building.

Post-tensioning of deck girders



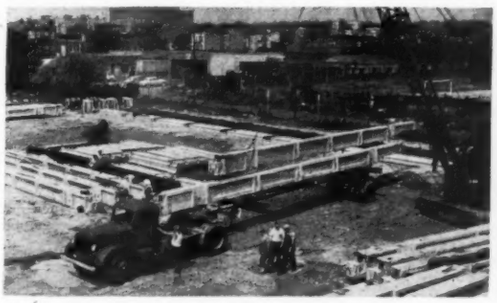
1. A close-up of the plywood form used in casting the 62-foot-long girders. The three Stressteel bars which will be used to post-tension the girder protrude from the end form.

2. Concrete is chuted to the girder form from a Dumpcrete and is hand-vibrated. At left, a finished girder is curing. None of these girders has been stressed yet. *C&E Staff Photo*

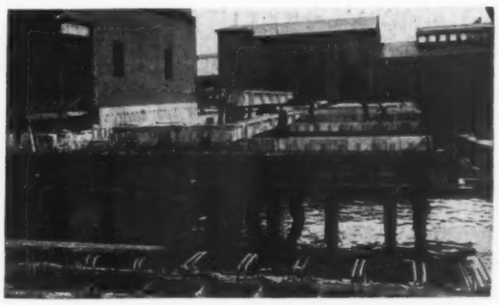


3. A Templeton-Kenly jack, operated by a hand pump, stresses the bar until elongation reaches 3⅛ inches. Note prestressed stringers stockpiled in background.

4. Grout is pumped into the space between the Stressteel bars and the flexible metal tubing. The material is pumped into the tubing through ⅜-inch pipes cast in the concrete.



5. A completed girder is placed on a trailer for the haul to the wharf. Others are stockpiled at lower right, while three newly cast beams stand on the form bed left of the trailer.



6. A 60-ton floating steam crane lowers the girders into place across the center span of the wharf. The beams span rows of piles flanking the tubes of the Lincoln tunnel.

Prestressing

Precrete's casting yard was separated into several sections to accommodate prefabricating of the reinforcing bars, post-tensioning, pre-tensioning, and stockpiling.

Pre-tensioning was done on a Freyssinet-style concrete bed about 225 feet long. End abutments were made 5 feet thick to transfer the prestressing force to the earth. Concrete slabs 6 inches thick were placed at both ends to support the wire reels and the jacking equipment.

Beds were designed to handle four rows of stringers, two at a time. At the ends, the wire strands were fed through holes in a 1½-inch plate and their ends were locked into 3-piece jaws made by Reliable Electric Co. To reduce the bond between the cone and the jaw and thus speed dismantling after stressing, small strips of ordinary wax paper were wrapped around the cone before it was inserted.

Jacking

Steel structures composed of 24-inch reinforced I-beams and heavy plates were erected at each end. Two Pine 200-ton double-acting center-pull jacks bore against secondary uprights at the jacking abutment. Activated by a Rodgers 10,000-psi pump, the jacks pulled two 3½-inch threaded rods equipped with three nuts. The two outside nuts transferred the force from the jack to the pulling frame, and the inside nut was turned tight against the main upright to make sure the assembly remained stressed. Total elongation was about 17½ inches.

The casting schedule called for ten pairs of 18-foot or 12 pairs of 16-foot stringers each day. Forms were wood bolted to an angle-iron frame, and consisted of center and side pieces. They were anchored to the bed with a channel iron held in place by a Richmond bolt. Perforated strips of wood locked the wire strands at the required level and also acted as end forms. The timber units were re-used more than 30 times.

Daily Cycle

Generally, the same routine was followed each day. In the morning, the forms were stripped, the wires cut, and the stringers stockpiled. The bed was cleaned in the afternoon, and sprayed with a paraffin-base compound that prevented bond between the two concrete surfaces. One crew then oiled and reset the forms, while another strung out the strands of American wire from reels at either end. To get the same initial tension in each strand, the ends were locked at the plate, the reel reversed to take up the slack, the near end locked, and the strand cut. When all the wires were in place, the jacking could be accomplished in about ten minutes. Concrete was hauled in Dumpcretes, chuted directly over the tensioned wires, and consolidated with a Vibro-Plus hand vibrator.

The cycle was repeated every day on alternate beds.

Post-Tensioning

The 62-foot girders were also cast on a concrete bed. Side forms were ¾-inch plastic-coated plywood with a steel frame backing. They were tied together through the pipe sleeves provided for transverse prestressing. Bolts anchored the forms to the bed.

The 7.15-bag mix of air-entrained concrete was made with a 3 to 4-inch slump so that it would flow easily from the Dumpcretes to the molds.

When the concrete had reached a strength of 3,500 psi, one of the three bars was stressed to make the girder capable of carrying its own weight. The 12-ton unit was then picked up and stockpiled until the concrete reached a strength of 4,200 psi. The last two bars were then stressed.

The Stressteel bars were fitted with nuts and anchor plates to bear against the cured concrete. They were encased in Atlantic flexible metal tubing.

Stressing was done simultaneously by Templeton-Kenly jacks and pumps, one at each end. A total force of 100,000 pounds was applied to each bar to achieve a 3⅛-inch elongation.

After stressing, the spaces between the bars and tubes were grouted through ⅜-inch pipes cast in the concrete.

Erection

All work at the wharf was done by Merritt-Chapman & Scott forces. Their first big job was to drive the 23 rows of H-piles, some over 120 feet long. The job was tricky, especially at the tunnels, where the straddling piles had to be driven 5 feet from the walls of the tubes. Everything went all right, but the clay blanket over the tubes made tough driving.

A 60-ton floating steam crane did all driving with a McKiernan-Terry 11-B3 hammer. Piles were cut off 10 feet above mean low water and then encased in a 24 x 28-inch cap of reinforced concrete. Universal plywood side-form panels were supported on 2 x 6 joists that spanned heavy timber girders. The entire form assembly was held up by friction collars on the H-piles.

All the precast units were set in place with the 60-ton rig. The stringers were laid side by side and locked together with concrete. The girders were also laid side by side and locked together with transverse prestressing and concrete. A 2-inch wearing course of blacktop was laid on top.

(Concluded on next page)

(Continued from preceding page)

A. K. Burnham, Jr., is project manager, and E. M. Allgor is superintendent for M-C & S.

I. O'Rourke, Jr., was in charge of the Precrete precasting work. G. S. Pinter was the consulting engineer for Precrete.

J. Kyle is chief engineer for the Port of New York Authority, and J. Gavin was resident engineer for the Port Authority on this project. M. Small was project engineer for Parsons, Brinckerhoff, Hall & Macdonald, New York City, consultants.

THE END

STANDARD STEEL "S-J"
for PATCHING—PRIME COAT—SEALING-
SHOULDER REPAIR and CRACK FILLING

Built to The Highest Standard

Compare These Special "S-J" Features:

1 SUCKS BACK surplus material into tank after spraybar is closed. Less drip! Means clean bar for next job!
2 PIPING and PUMP are automatically drained after finishing a job! This prevents "freezing" or slow start on heavy materials!
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SAVES TIME and LABOR
HANDLES ALL TYPES OF BITUMINOUS MATERIAL

★ For year round use—Standard Steel "S-J" Maintenance Distributor can be used either for emergency or secondary construction work.

The most adaptable piece of road equipment you can buy, the "S-J" performs many duties of heavier machines — such as building drives, alleys, playgrounds, parking areas, shoulders, reshaping curves as well as patching and sealing. Quick to start and get going, fast on the job, the low cost of this equipment will be paid for in reduced construction and maintenance cost in a single season. Get the facts and cost on the "S-J" before you invest in any similar equipment.

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SJ5

Standard Steel Works, NORTH KANSAS CITY, MO.

I-H and Diamond T Make Manufacturing Agreement

Under an agreement between International Harvester Co. and the Diamond T Motor Car Co., both of Chicago, Ill., Diamond T will assemble some special models of motor trucks for International Harvester, and the latter company will make components for Diamond T motor trucks.

The agreement will provide Harvester with a midwest facility for assembling the larger and more specialized types of International trucks. Heretofore, it was impractical for the company to assemble units of this type at its Fort Wayne, Ind., plant, which produces heavy-duty trucks. Some of Harvester's engineering and production personnel will be located at the Diamond T plant for inspection purposes.

Harvester, in supplying Diamond T with motor-truck components, will be continuing and expanding a practice it has been following for the past several years. The manufacturing agreement will not affect the sales organization of either company.

Roller Chains, Sprockets

■ A catalog on stock roller chains and sprockets is available from the Diamond Chain Co., 402 Kentucky Ave., Indianapolis 7, Ind. The line described includes minimum bore sprockets for reboring, as well as finished bore and Taper-lock bushed sprockets which are ready to use.

Chain selection and application data is included in the catalog.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 378.

Wedge-Fitting Swivel Saves Head Room

■ A new wedge-fitting swivel, designed to speed hook-up and to save head room, has been added to the Miller swivel line, manufactured by General Machine & Welding Works, Inc., 1110 E. Second St., Pomona, Calif. The quick-connecting wedge fitting for single-line hoisting in construction is incorporated right in the body of the swivel. This saves up to 8 inches of headroom.

In addition to the new wedge fitting, there are 15 other styles of Miller swivels made in 11 different sizes. Capacities range from 750 pounds to 150 tons.

For further information write to the company, or use the Request Card that is bound in at page 18. Circle No. 405.

Carboloy Appointment

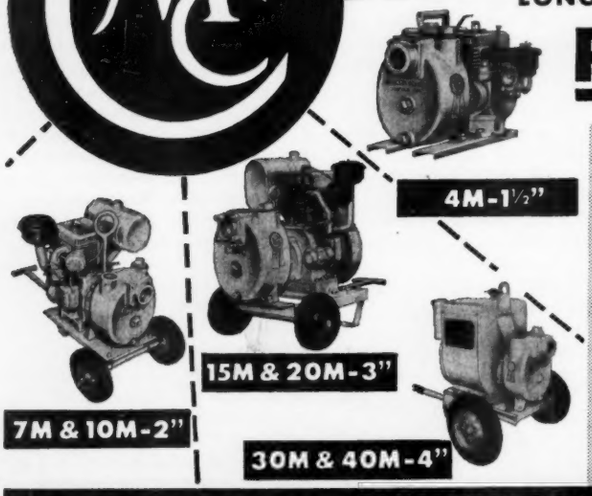
Michael D. Barnett has joined the Carboloy Department of General Electric Co., Detroit, Mich., as a sales representative for the midwestern district.

He joined the company three years ago, and has worked in both engineering and marketing.

DUAL PRIMERS

FOR FAST DUAL PRIMING—DEPENDABLE LONG LIFE OPERATION AND REAL

PUMP VALUE!



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- Faster Dual Volute Priming
- Self Cleaning Case
- Lighter Weight—Easier to Move
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- Half the Parts—Easier to Service
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CONSTRUCTION MACHINERY COMPANY, Waterloo, Iowa

Maximum Joint Filling WITH Servicised SELF-EXPANDING CORK

► Expands 50% Beyond Original Thickness After Compression
► Fully Compressible
► Non-extruding, Resilient

Ideal for large concrete structures or masses where substantial initial contraction is anticipated before any considerable amount of expansion takes place. 50% expansion beyond original thickness after compression keeps joint space filled, regardless of concrete movement. Made in ½" to 1" thicknesses; widths to 36" and lengths to 10 ft.

Write for Catalog and Complete details on Servicised Joint Fillers and Sealers.

SERVICISED PRODUCTS CORP.
6051 W. 65TH ST. • CHICAGO 38, ILL.

Four-Compartment Dump Truck Body Delivers Measured Amounts of Aggregate and Cement

The 11-yard Galion Model 12N-7 batch-body has a capacity of 54 cubic feet in each aggregate compartment and 18.6 cubic feet in each cement batch box to deliver measured amounts of the paving materials.

■ A new special-purpose batch body for dump trucks is announced by The Galion Allsteel Body Co., Galion, Ohio. Designed to deliver measured quantities of cement and aggregate to concrete mixers on highway-construction projects, the new body is divided into 4 aggregate compartments by waterproof batch boxes.

The manufacturer points out that the hinged covers on the boxes also keep cement dry during inclement weather. A full-width hinged bottom plate on each box is said to assure even distribution of cement over the aggregate during discharge.

The latching mechanism mounted on the batch boxes is of heavy durable construction. The boxes can be easily removed to permit use of the dump body for material stockpiling.

Models announced include the 11-yard Model 12N-7 batch body and the Model 12N-5, which is available in 9 to 11-cubic-yard capacities.

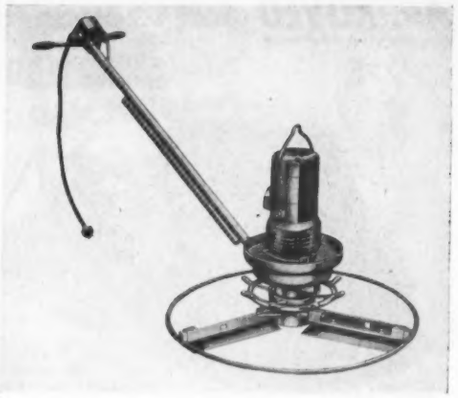
For further information write to the company, or use the Request Card that is bound in at page 18. Circle No. 451.

Soil-Contact Membrane for Concrete Slabs

■ Reinforced waterproof paper for use under crawl spaces or concrete slabs is made by Glas-Kraft, Inc., Mill St., Lonsdale, R. I. The chemically-treated paper reportedly has high resistance to rot, mildew, and fungi.

Rotbar No. 2 is made from two sheets of treated paper bonded together under heat and pressure with a waterproof laminate. Into this laminate are swirled strong continuous glass fibers. The product is available in widths up to 25 feet, with asphaltic laps.

For further information write to the company, or use the Request Card at page 18. Circle No. 358.



The new Mall Model TE-4 power trowel.

New Power Trowel for Concrete Finishing

■ A new power trowel for both floating and finishing work is offered by Mall Tool Co., 7740 S. Chicago Ave., Chicago 19, Ill. The electric Model TE-4 Pow'r Trow'l comes equipped with 14-inch-wide tool-steel finishing trowels set in a 36-inch-diameter ring. The machine can also be equipped with 18-inch-wide floating trowels.

Special features include a convenient power switch mounted on the handlebar; a motor that can be converted from 110 to 220-volt use by a switch of a lever; speedy conversions from one trowel to the other; an auxiliary carrying handle mounted under the operating handle; a tool tray for holding bags of sand, gravel, or steel slugs for extra weight; a top handle for easy lifting from one floor to another; and a canvas hood for protection against rain, dust, or grit.

Powering the new trowel is a 110/220-volt, single phase, 60-cycle, air-cooled electric motor. The machine weighs 128 pounds.

For further information write to the company, or use the Request Card that is bound in at page 18. Circle No. 352.

Booklet on Masonry Building Requirements

A code of minimum construction requirements is contained in "American Standard Building Code Requirements for Masonry", a revised edition of the 1944 manual.

Definitions, requirements for materials, allowable stresses, and general requirements for all types of masonry except reinforced masonry and thin veneers are contained in the booklet. Developed under the procedure of the American Standards Association and under the leadership of the National Bureau of Standards, the publication is one in a series of building-code standards. Among the organizations represented on the committee preparing the standard were the American Society of Civil Engineers, Associated General Contractors of America, Inc., National Crushed Stone Association, and National Sand and Gravel Association.

The booklet is published by the U. S. Department of Commerce, and may be ordered from the U. S. Government Printing Office, Washington 25, D. C., or from the American Standards Association, 70 E. 45th St., New York 17, N. Y., at 20 cents per copy.

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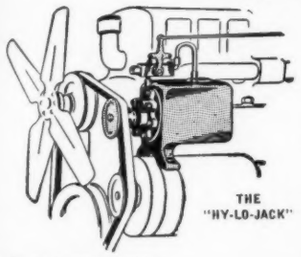

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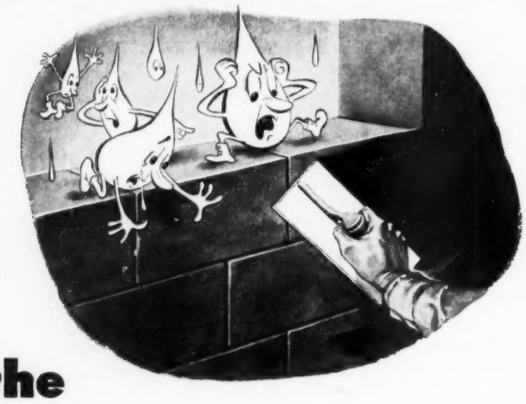

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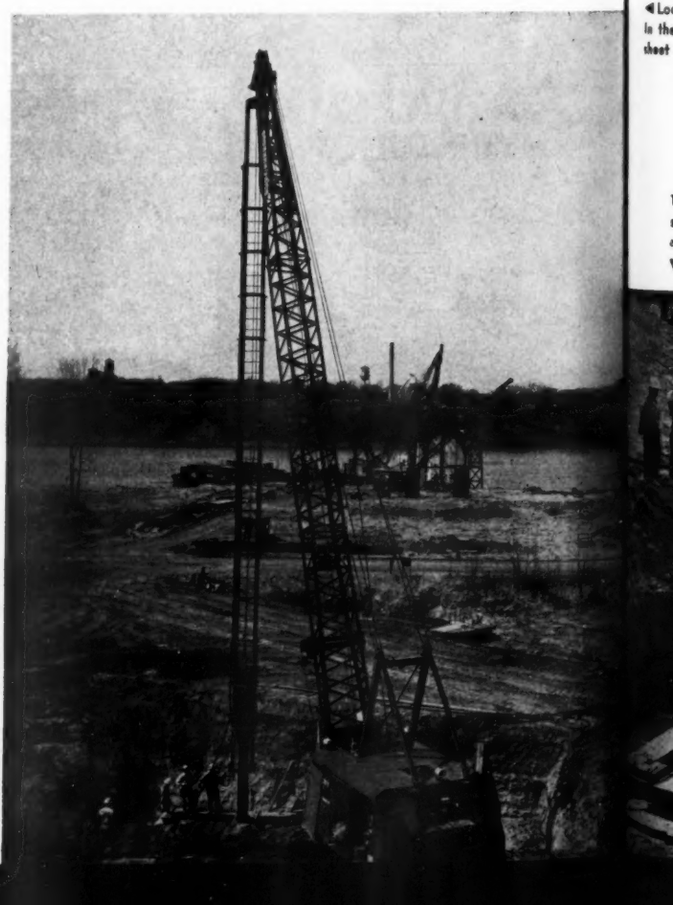
Barge-mounted cranes set form sections for pours on the pier in the left side of the river and a bent on the left-hand shore. An American revolver crane is at left, and a Clyde Whirley is just in front of the shore bent.
C&B Staff Photo

Continuous-Arch Bridge Has No Diagonal Members

STRUCTURAL SIMPLICITY is the design feature of the new Missouri River bridge at Leavenworth, Kans., a span having no diagonal members in its main-span trusses. The two-span, continuous, tied-arch truss is supported on three piers—one near each bank and one in the middle of the river—and spans 841 feet of the main channel. Seven deck-girder spans making up the east or left-side approach and nine spans on the west or right-side approach give the structure a total length of 2,436 feet between abutments.

Financed jointly by the City of Leavenworth and the highway departments of the States of Kansas and Missouri, the structure will be operated as a toll facility by the city. Tolls will be used to repay a $3 million bond issue floated by the city to finance its share of the construction. In addition to the city's investment, each state has contributed the equivalent of a half million dollars toward the construction of approaches on its side. Original estimate of the cost was approximately $4 million, but since all bids have been less than the respective estimates, the final cost will undoubtedly be somewhat less.

The project is divided into eight major contracts, which were awarded to several contractors. They include contract No. 1, the three river piers, and No. 2, the main-span super-



Footings for three river piers are sunk into solid rock in pneumatic caissons; piling supports approach bents

structure, both of which are held by the Kansas City Bridge Co., Kansas City, Mo. This contractor also holds contract No. 2B, the left-side approach structure. The left approach grading was done by Olson Construction Co., Lincoln, Nebr. The right-side approach structure, contract No. 2A, is being built by The Maxwell Bridge Co., Columbus, Kans. The paving contract for the left approach was awarded to J. A. Tobin Construction Co., Kansas City, Kans.

Contracts for the right approach structure and grading were awarded by the Kansas State Highway Commission. All other contracts were awarded by the City of Leavenworth.

Supervision of construction of the project is in the hands of Howard, Needles, Tammen & Bergendoff, consulting engineers of New York and Kansas City, who designed the entire facility.

This new structure will replace an old bridge which crosses the river at Fort Leavenworth about a mile upstream from the new location. The old structure was built in 1872 as a railroad bridge and served in that capacity until the railroad was discontinued in 1893. Fitted with a wooden deck, the bridge then carried wagon traffic for about 20 years. During that period there were several fires on the deck, which finally

(Continued on next page)

◀Looking west toward the city of Leavenworth from the left-hand-side approach fill. In the foreground, a Manitowoc 3500 crane using a McKiernan-Terry 9B3 hammer drives sheet piling for a shore bent.

This close-up of pile-driving operations shows the McKiernan-Terry hammer driving a steel pile to refusal in rock 60 feet below. Fifty blows to the inch with this hammer assure a bearing value of 100 tons.

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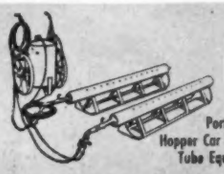

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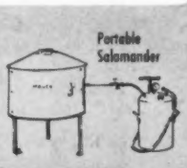

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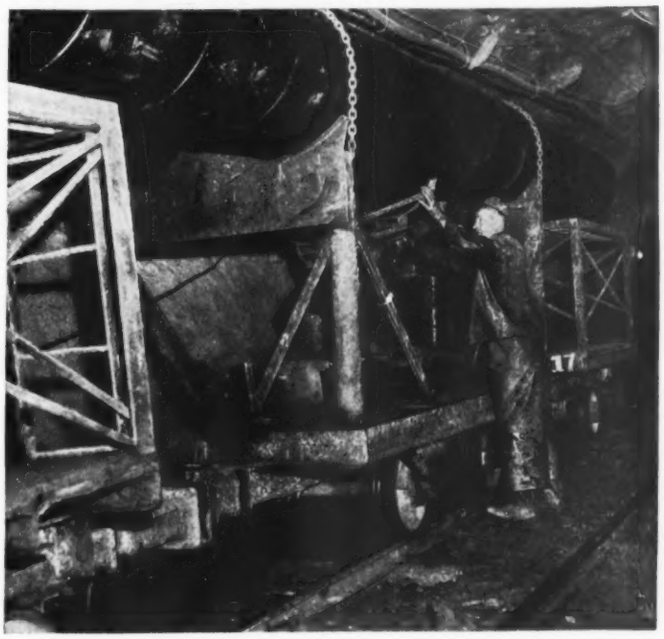

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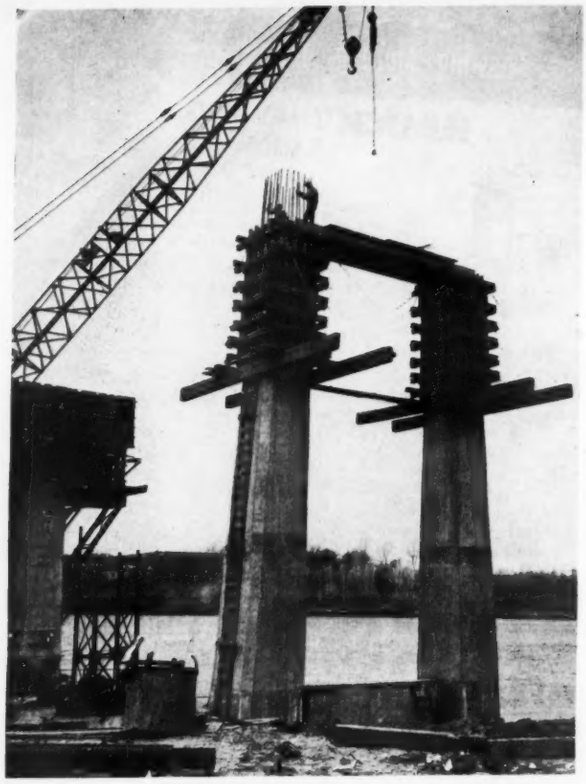

Workmen assemble and tie the reinforcing steel for a lift on a bent for the left-side approach span. The forms are well guyed with cables to assure correct alignment. The same forms are used on all bents on this side of the river. *C&E Staff Photo*

(Continued from preceding page)

led to the abandonment of the structure in 1913. It was not reopened to traffic until 1925, when the Bureau of Prisons of the Department of Justice gained control of the bridge and reopened it to the public as a highway bridge. When the new facility is ready for use early in 1955, the old bridge will be removed.

Lower Chord Continuous

The two long arch spans over the river channel have parabolic top chords built up of a box section which is nominally 2 feet 10 inches x 2 feet 3 inches in cross section. The bottom chord, which is continuous across the three piers, is also a box section and measures 2 feet 3 inches wide x 6 feet high. Vertical members of the bridge are hangers by which the floor system is suspended from the arch. These hangers are 12 x 12-inch BP sections weighing 53 pounds per foot.

Hangers connect to floor beams which are 48-inch-deep plate girders and which span the width of the structure. In the other direction, 24 and 27-inch WF beams serve as stringers to support the concrete floor. A 7-inch reinforced-concrete floor spans the 7-foot 8-inch spaces between stringers. Lateral bracing between the two top chords is accomplished without the use of the customary diagonal cross-bracing; straight lateral members with deeply haunched ends provide rigid connections.

Approach spans are carried on long continuous girders spliced at points of counter-flexure with pin connections. The two girders are nominally 6 feet deep and are spaced 23 feet apart. At intervals of 21.5 feet, floor beams consisting of 30 and 33-inch WF beams span the space between the girders to carry two 21-inch WF intermediate stringers. The concrete deck slab rests on the top flange of the girders and the intermediate stringers, and it cantilevers on the outside of both girders.

In typical cross section, the bridge has a roadway 26 feet wide, with 2½ feet of sidewalk and a handrail parapet on each side. Aluminum handrails finish off the section. Approach spans to the left of the main river provide additional area to carry flood flows of the river. The left approach road is graded high above the surrounding countryside to be well above flood stages. On the right side, the approach spans cross the tracks of two railroads in carrying the roadway to a junction with city streets. The approach roads will connect with U. S. 73 and State Routes 92 and 7 on the Kansas side and with State Routes 92 and 45 on the Missouri side.

Footings in Caissons

Starting early in November, 1953, the Kansas City Bridge Co. worked

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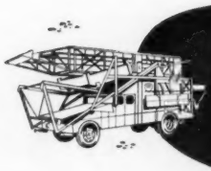

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through the winter on the three river piers. Winter is usually the time of low water in the river, and that condition prevailed throughout the construction of the piers, which were completed in May, 1954. Maximum water depth encountered at the pier locations was about 10 feet. Although work was suspended for a short period due to heavy ice floes, there were no delays because of high water.

Each pier footing was constructed inside a steel caisson. These caissons varied from 32 x 32 to 22 x 44 feet in cross section, but were all 16 feet deep. Each caisson was fitted with two 8 x 11-foot dredge wells. A sheet pile fender was first driven on the upstream side of the pier location, creating an eddy which caused the sand in the bottom to build up rather than scour away. The floating caisson was then towed into place, accurately positioned by spuds driven into the river bottom, and sunk to the bottom.

Sand was dredged from within the caissons by an American revolver crane mounted on a 43 x 70-foot barge and a Clyde Whirley crane on a 44 x 80-foot barge. Both machines used 1¼-yard Owen clamshell buckets. The cranes were able to dredge out the sand until the caissons settled to within about 2 feet of the rock. The caisson for the right-side pier penetrated only about 17 feet of sand before striking solid limestone. The middle and left-side piers were carried down through 36 to 40 feet of sand before reaching bearing on Bonner Springs shale.

When the caissons were within about 2 feet of rock, the dredge wells were sealed with an 8-foot plug of concrete at the lower ends. Three-foot access shafts were provided through the plug. Air pressure was then applied to the caissons and the balance of the excavation was completed by hand within the pressurized caissons. A pressure of 18 psi was sufficient for the right pier, but the middle and left piers, which were much deeper, required 23 pounds. Crews of eight men worked a 7½-hour shift under the lower pressure and two 3-hour half-shifts under the higher pressure. Three crews kept the work going around the clock.

Power Barge

Air for the workmen and for operating tools was supplied from a battery of compressors mounted on a 26 x 120-foot barge. Two Joy 630-cfm compressors driven by Caterpillar diesel engines and two Worthington 500-cfm compressors furnished air to the caissons through a common receiver. For operating pneumatic equipment, a Joy 275-cfm high-pressure compressor boosted the pressure of some of the air to 175 psi. Crews using Chicago Pneumatic clay spades, Thor paving breakers, and Gardner-Denver jackhammers excavated through the remainder of the river-bottom material and sank the caissons 5 feet into the solid rock. Rock was drilled and blasted. A typical charge consisted of 35 to 40 holes, each loaded with 1 to 1½ sticks of Hercules 40 per cent gelatin.

In addition to the compressors, the power barge also carried two Kohler 5-kw dc generators to provide light in the caissons and for night operations.

Complete facilities for workmen were provided. The barge also carried 10,000 gallons of fresh water, and this supply was replenished from the Leavenworth municipal supply. A hospital lock on the barge was available for gradual compression or decompression if required.

When the excavation was complete, the caissons were filled with concrete to provide the base for the piers. On these bases, concrete subshafts, measuring 15½ x 26 feet in cross section and varying from 12 to 28 feet in height, were formed and cast. The tapering shafts which form the heavy stem of the T-shaped piers were constructed on the subshafts. Shafts are 47 feet high on the middle and left piers and 52 feet high on the right pier. They are 9½ x 20 feet in section at the top and taper at a rate of ½ inch per foot in all directions. Both upstream and downstream faces of the pier shafts have rounded corners. The flaring head of the T is 9½ feet thick, 43 feet wide, and 18 feet high in all cases.

The several lifts of the piers were formed with vertical 2-inch sheathing lined with ¼-inch plywood. Four by six girts spaced from 1 to 2 feet apart backed up the sheathing, and double 3 x 6 vertical wales were tied completely through the pier as well as braced on the outside. Form panels were prefabricated and were set in place by one of the barge-mounted cranes. Each section was re-used on each of the three piers, with modifications where necessary.

Ready-Mix Concrete

A short distance downstream from the bridge site, a hopper for concrete was installed at the end of a dock. This enabled transit-mixers to back out onto the dock and dump concrete into the hopper. A gate at the bottom of the hopper discharged the concrete into 2-yard Gar-Bro and Wiley concrete buckets on barges in the river. Three barges carried two buckets each. Two towboats—the Marian and the Hoover—shuttled barges with loaded buckets from the dock to the pier where the pour was being made, and returned with empties. Geiger Ready-Mixed Co., Leavenworth, furnished the concrete.

Two Maginniss Hi-lectric vibrators compacted the mix as it was placed. One Hi-lectric generator powered both vibrators. Wherever the drop from the buckets exceeded 6 feet, the concrete was placed through hoppers and elephant trunks to prevent

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segregation. Most pours embodied lifts of 12 to 16 feet. During cold winter weather, the piers were covered with canvas and heated with steam for 5 days after the pour. In warm weather, water was used for curing.

All of the reinforcing steel for the head of each pier was prefabricated into a single unit on a barge, and then hoisted into place by one of the barge-mounted cranes. This huge cage of bars was 43 feet long and 18 feet high, and weighed about 9 tons. The individual bars were tied or welded into place. A 3-point pickup enabled the crane to raise the cage without too much distortion. Reinforcing for other sections was tied in place.

Approach Bents

Six bents and an abutment support the left approach structure. Bents are similar except for height. The bent adjacent to the river is the highest, and the others decrease by steps to the shortest one next to the abutment. Each bent rests on two footings which are founded on 12-inch steel bearing piles driven into the underlying rock to practical refusal. The various bents required 18 to 23 piles each, and piles ranged from 45 to 68 feet long. Outside piles in each footing were battered.

A typical bent consists of two concrete footings, 12 feet square and 3½ feet deep, resting on the steel piles. Bent columns are 3½ feet square at the top and batter so as to gain ½ inch per foot of height. The sides batter ¼ inch per foot, the inside face is plumb, and the outer face batters ½ inch per foot. Heights vary from 40 to 60 feet. The two columns are tied together near the top by a cross member 4 feet deep, 3 feet wide, and 19½ feet long.

The contractor built the highest bent first and was then able to use the same forms for all other bents by simply cutting the bottom section down to proper length. A typical bent form consisted of 2-inch sheathing lined with ¼-inch plywood. Horizontal 4 x 6 girts were spaced about a foot apart at the bottom and up to 2 feet at the top. All girts extended out beyond the sheathing and were tied across to the panel on the opposite side of the form with high-tensile steel rods and clamps. These rods were of 7/16-inch diameter, but at both ends they were upset and threaded with ½-inch threads. Wing nuts and patented wedge clamps tightened the rods. One double 3 x 6 vertical wale on each side of the form, with tie rods extending through to the wale on the opposite side, stiffened the form. Cable guys and tie-downs held the forms vertical during concrete placing and prevented flotation.

Concrete for the left approach bents was hauled from Leavenworth across the old bridge and down to the new location in ready-mix trucks. Concrete was bucketed into the forms in a 1-yard Blaw-Knox bucket by the P&H 955 crane. Hilectric vibrators were used to consolidate the mix. The six-bag concrete mix was the same as that used for the piers. It contained 1-inch-maximum size aggregate, type I cement, and Protex air-entraining agent. Air content was maintained at 3 to 6 per cent at the pour. Left-side approach bents contained about 920 cubic yards of concrete. The three river piers required 4,500 cubic yards.

Steel Erection

Structural steel for the approach spans was fabricated by Missouri Valley Steel, Inc., Leavenworth. River spans were fabricated by Kansas City Structural Steel Co., Kansas City, Kans. Delivery was made by rail to a siding on the Missouri side about a mile and a half from the job. Two cranes—a P&H 955 and a Manitowoc 3500—unloaded and erected the steel for the approach structure. One crane unloaded rail cars at the siding and loaded the pieces on trucks for delivery to the job. The other crane set the steel in place, working from the ground.

When the approach structure was complete, a traveling guy derrick was set up on the structure at the river's edge. This derrick, with 100-foot mast and 85-foot boom, was powered by an American 3-drum steam hoist. Four falsework bents, consisting of timber pile bents supporting steel towers, were erected in the channel to support the trusses during erection. Starting at the left pier, the trusses were assembled progressively across the river, with the guy derrick moving ahead as new sections were added.

Placing of the concrete deck was expected to get under way this month, with completion of the entire structure scheduled for January. Paving of the approach roads was started in June. This work included 3.2 miles of concrete pavement 24 feet wide and 8 inches thick, and 2½ miles of flexible pavement consisting of a base course of 8 inches of rolled stone and a 1½-inch hot-mix bituminous surface.

Safety Program

Kansas City Bridge Co. placed special emphasis on its safety program. No workman on the job went without his hard hat. Life preservers were always in evidence around the water. Each week one name was drawn from a hat in a safety contest. The name drawn was known only by the foremen and supervisors. They then observed this man all week. If during the week he committed no violations of safety rules he received a reward of $15. Since no workman knew whether or not his name had been drawn for that particular week, the contest kept the entire crew alert in safety matters.

The job office was located on a barge moored at a convenient land-

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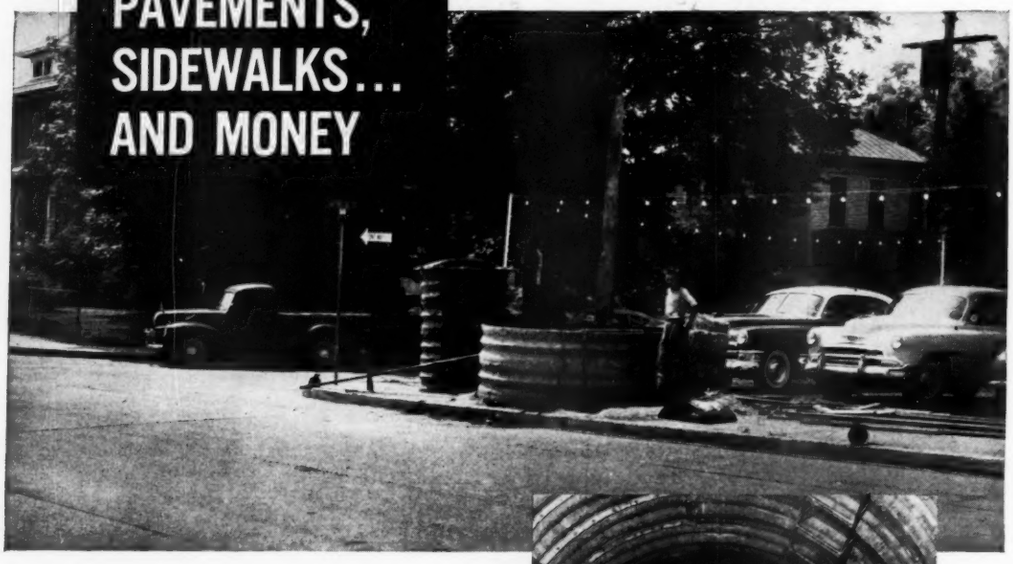
Inconspicuous shaft eliminates traffic congestion and torn-up pavement.



Cooperating in the regional clean-up of the Ohio River, the city of Charleston, West Virginia, cuts costs on a big intercepter sewer project by tunneling the job with Armco Liner Plates.

One problem was to install intercepter sewers about 25 feet deep under two heavily traveled streets. Open cutting would not only have torn up sidewalks and pavements but also disrupted traffic and business. So for reasons of economy and convenience it was decided to tunnel the job with Armco Liner Plates.

Tunnels were driven in both directions from shafts sunk every 400 feet. Almost 4,000 feet of 12-gage, 48-inch diameter Armco Liner Plate was used. When the tunnel was completed the liner plate used in the shafts was salvaged for re-use.

Armco Liner Plates simplify installation of tunnels, shafts, and caissons. They are also ideal for lining existing failing structures. Unskilled crews do the work easily, unhampered by bad weather. And corrugated metal design provides ample strength without excess weight or bulk. Only simple tools are needed. Labor costs are low. Wide size and gage range. Write for details. Armco Drainage & Metal Products, Inc., 3294 Curtis Street, Middletown, Ohio. In Canada: write Guelph, Ontario. Export: The Armco International Corporation.

Looking down Armco Liner Plate shaft to mouth of tunnel.

Dump cart on rails hauls out dirt as tunnel progresses.

ARMCO LINER PLATES ARMCO

R. D. Bleich (right), project superintendent for the Kansas City Bridge Co., and Gerald Englehart, field engineer, look over a plan sheet in their floating office.
C&E Staff Photo

ing in Leavenworth. A Motorola short-wave radio setup for keeping the office in constant communication with the company's home office in Kansas City and with crews in the field consisted of a portable set, which could be carried wherever desired, and a mobile unit on the towboat Marian. The radio was especially valuable for communicating with the towboat in the river.

Field Office Payroll

Payrolls as well as cost records were kept in the field office through the McBee system. With this very simple system, one man kept payroll records for as many as 100 employees, with a normal weekly payroll of about 60. By the use of carbon copies and a ball-point pen, two copies of the payroll are produced together with the check and employee's record of earnings. Many cost records formerly kept in the main office are now kept entirely in the job office.

Supervising these projects for the Kansas City Bridge Co. was R. D. Bleich as superintendent. He was assisted by Gerald Engelhart and Richard Hall, field engineers. All phases of the project were under the direction of Josef Sorkin, managing partner for Howard, Needles, Tammen & Bergendoff. Shelby K. Willis was resident engineer for the consulting engineers. THE END

New Earthmover Tires Have 40-Ply Rating

■ Tires that weigh 2,600 pounds and stand 8 feet tall for use on large earthmoving equipment, including bottom-dump trucks and self-loading scrapers are a new product of United States Rubber Co., Rockefeller Center, New York 20, N. Y. These nylon tires are 30.00-33 in size and have a 40-ply rating. They far exceed in size the 24.00-32 tires that had previously been the largest ones made by the company. The new giants are called U. S. Royal Con-Trak-Tors, and have a full lug tread design that reportedly insures excellent traction.

For further information write to the company, or use the Request Card at page 18. Circle No. 437.

Greer Hydraulics Moves

Greer Hydraulics, Inc., manufacturer of service and maintenance equipment, has moved into its new offices at New York International Airport, Jamaica, N. Y. Both the company's plant and offices are situated in the new facility, which covers a 10-acre site.

Diamond Core Drill For Deep-Hole Work

■ A new diamond core drill is announced by E. J. Longyear Co., Foshay Tower, Minneapolis 2, Minn. Designed for deeper holes, the Model 44 drill has a capacity of 3,000 to 4,000 feet of A rods.

A new hydraulic swivel head accommodates all standard sizes of rods, including 2⅞-inch flush-coupled rods, Longyear wire line rods, and the newly adopted world standards.

A large hoist of extra capacity, using planetary gears, has oversize brake bands and metallic linings to handle rods safely and rapidly at a depth. A wide selection of gasoline, diesel, air, or electric motor power is available.

For further information write to the company, or use the Request Card that is bound in at page 18. Circle No. 363.

Tarpaulins for Machinery

■ A line of cotton-canvas tarpaulins available in 13 stock sizes in 8 to 14.9 ounces - per - square - yard weight is illustrated in a leaflet from C. R. Daniels, Inc., Daniels, Md. Penguin tarpaulins are made of closely woven heavy yarn impregnated in brown color, and have triple-sewn seams, hemmed edges, and rust-proof grommets.

Standard cut sizes listed in this leaflet range from 5 x 7 feet to 20 x 30 feet.

To obtain this literature write to the company, or use the Request Card that is bound in at page 18. Circle No. 454.

28 Dependable Sources of Emulsified Asphalt

FROM Maine to the Gulf... from the Atlantic to Iowa... you can be sure of fast, dependable service on asphalt emulsions and mixes by calling any of the McConnaughay Licensees listed at right. This co-ordinated group, guided by a central organization, is made up of experienced manufacturers and contractors who fully understand your problems, offer extensive engineering and testing services on paving materials and mixtures as well as on-the-job advice. Fully equipped to take on complete contracts or provide the laboratory facilities, emulsions and technical services required... they are always ready to work with you closely in solving your problems. Take advantage of this exceptional service. If you are figuring on highway, street, or general paving, get in touch with your nearest McConnaughay Licensee or contact...

McCONNAUGHAY LICENSEES
Operating K. E. McConnaughay Emulsified Asphalt Plants

1. Doherty and Swearingen Co. 53 Main St., *Yarmouth, Maine*
2. Berkshire Asphalt Co., Inc. 620 Berkshire Ave., *Springfield, Mass.*
3. James Huggins & Sons, Inc. Medford & Commercial Sts. *Malden 48, Massachusetts*
4. C. C. Plumb, Elmwood Station P. O. Box 65, *Providence 7, R. I.*
5. C. C. Plumb *Portland, Connecticut*
6. Albany Asphalt & Aggregates 75 State St., *Albany, New York*
7. Knight Paving Products, Inc. 1655 Union Rd., *Gardenville, N. Y.*
8. Knight Paving Products, Inc. Vine Street, *Ithaca, New York*
9. Knight Paving Products, Inc. 1980 E. Ave., *Rochester 10, N. Y.*
10. Knight-Bitumen Corp. *Watertown, New York*
11. Seaco, Incorporated 2700 Industrial Drive, *Columbia, S. C.*
12. E. A. Mariani—Emulsified Asphalt Hooker's Point, *Tampa, Florida*
13. Pan-Am Southern Corporation P. O. Box 2, *New Orleans 6, La.* (Also serving Alabama and Mississippi)
14. Asphalt Products Co., Inc. Powell Ave., *Nashville 11, Tenn.*
15. Bituminous Materials Co. P. O. Box 267, *Terre Haute, Ind.*
16. Wabash Valley Asphalt Co. *Terre Haute, Indiana*
17. Brookman Construction Co. 17th & Gharkey Sts., *Muncie, Ind.*
18. Fauber Construction Co. *Lafayette, Indiana*
19. Asphalt Materials & Construction, Inc. 960 E. 22nd, *Indianapolis 2, Ind.*
20. Ready-Mix Asphalt, Inc. P. O. Box 882, *Fort Wayne 6, Ind.*
21. Walsh & Ikeler R. R. #2, *Gary, Indiana*
22. Bituminous Materials Co. 416 S. Water St., *Jackson, Mich.*
23. Bituminous Materials Co. 318 Atlantic St., *Bay City, Mich.*
24. Emulsions, Inc. *Lawrenceville, Illinois*
25. Bituminous Materials & Supply Co. 415 Maple St., *West Des Moines, Iowa*

Plants:

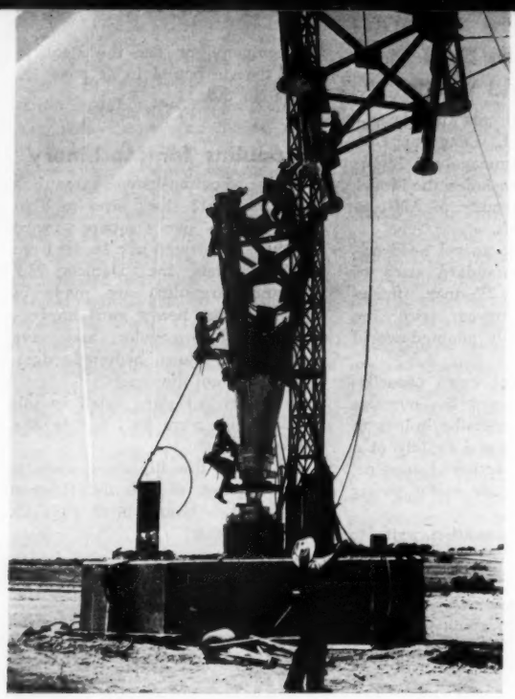
26. *Spirit Lake, Iowa*
27. *Iowa City, Iowa*
28. *Menlo, Iowa*

Eastern Representative:
John A. Dow
157 Church St., *New Haven 10, Conn.*

K. E. McCONNAUGHAY
EMULSIFIED ASPHALT
Plants and Processes
LAFAYETTE, INDIANA

SPECIFICATIONS OF THESE COLD-MIX PROCESSES AVAILABLE ON REQUEST

1—Penetration Macadam, 2—Open-Graded Plant Mix, 3— Open-Graded Road Mix, 4—Dense-Graded Plant Mix, 5—Dense-Graded Road Mix, 6—Mat Coat, 7—Seal Coat, 8—Sand Mix, 9—Sand Honing, 10—Patching.



Legs and bracing for the lower part of the tower are made ready for bolting to the base section. Circular flanges and wing plates were shop-welded to individual legs.

Shop-Welded Steel Sections Are Bolted for TV Tower

Members 30 feet long are bolted on the ground and hoisted into place on tallest man-made structure

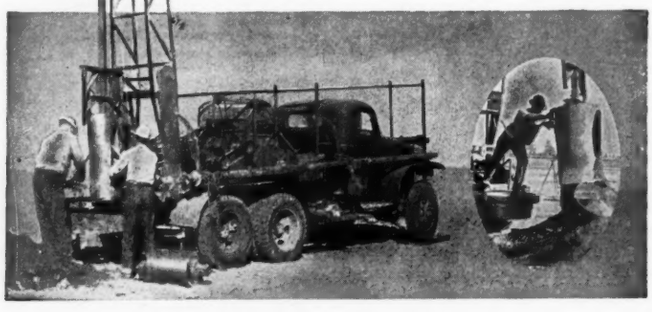
THE 1,572-FOOT TV tower built for Station KWTV, Oklahoma City, Okla., is unique in that it tops the height of the Empire State Building by 100 feet and is claimed to be the tallest structure in the world. It is also unique in design and construction. Designed and fabricated by the Ideco Division of Dresser-Stacey Co., Columbus, Ohio, the tower contains 675 tons of steel. Members were first shop-welded, then shipped to the site for bolting and erection. Mizell Construction Co., Ganado, Texas, was the field erector.

Triangular in section and measuring 12 feet on each of the three sides, the tower tapers at the top and base. It rests on circular steel slabs which are supported by a porcelain insulator made up of 21 oil-filled porcelain tubes. Each of these tubes is 4 inches in diameter. Together, they form a unit capable of withstanding a 5,600-pound load. The composite insulator in turn rests in a foundation containing 1,286 cubic yards of concrete and 15 tons of steel.

The tapered base, 30 feet in height, has legs of 10½-inch round steel forgings. At the point where the tower assumes full dimensions, the legs become 14-inch-wide flange beams. These are 30 feet long, weigh 314 pounds per foot, and rise in sections to the 300-foot level. Above that point, the legs again are steel rounds varying from 10½-inch-diameter in the lower sections to 4 inches in diameter near the top.

WORLD'S FASTEST METHOD

DIGGING CAISSON PIER HOLES
PREPARING BELLED FOOTINGS
PRE-BORING CONCRETE PILES
DRILLING WATER WELLS
DIGGING CESSPOOLS
EXPLORING MINERAL DEPOSITS
TESTING SOIL CONDITIONS



DRILLS 84" DIAM. HOLES 200' DEEP

A TWO MAN CREW, using the Calweld Model 150-A Earth Drill can complete as much as 250 feet of 36- to 48-inch diameter hole in an 8-hour shift. Equipped with specially designed interchangeable buckets, earth drilling operations can be stepped up through every type of subsurface formation. Calweld Model 150-A drills holes as deep as 200 feet and in any diameter ranging from 16 to 84 inches. Entire unit is built on skid frames to allow convenient mounting on any two-ton or larger truck. Rig can be easily moved and set up to quickly complete multiple bores with a minimum of lost drilling time. You get more hole faster with Calweld Earth Drills. Get all the facts; write today for complete information.

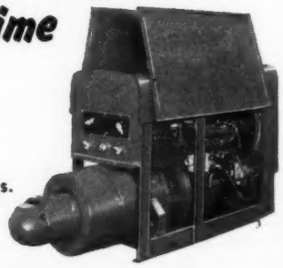
CALIFORNIA WELDING & BLACKSMITH SHOP, INC.
7222 EAST SLAUSON AVE., LOS ANGELES 22, CALIF.

CALWELD BUCKET TYPE **EARTH DRILLS**

A Lincoln speeds repairs...
to cut costly downtime

Contractors count on Lincoln "Shield-Arcs" to keep equipment operating . . . at a profit.
They choose Lincolns because:

1. **"Shield-Arcs" are reliable.**
2. **"Shield-Arcs" make good welds.**
3. **Operators like "Shield-Arcs".**



Write for Bulletin 1337 on Lincoln "Shield-Arc" DC Engine-Driven Welders.

THE LINCOLN ELECTRIC COMPANY
Dept. 5305 • Cleveland 17, Ohio
THE WORLD'S LARGEST MANUFACTURER OF ARC WELDING EQUIPMENT

Altogether, there are 52 individual tower sections.

Heavy circular flanges were shop-welded to each end of the individual leg sections. Thick wing plates, or gussets, were welded to the leg at a 60-degree angle to each other to hold the bracing in two directions. They were also used for bolting the girts.

At the site, the two legs and bracing of each section—most of which were 30 feet long—were bolted together on the ground and hoisted into position by an "electric gin pole". This is a 10-foot all-welded boom with an electric winch inside the latticed structure. Once the two legs were in place and the flanges bolted, the remaining leg was hoisted and the bracing bolted to its wing plates.

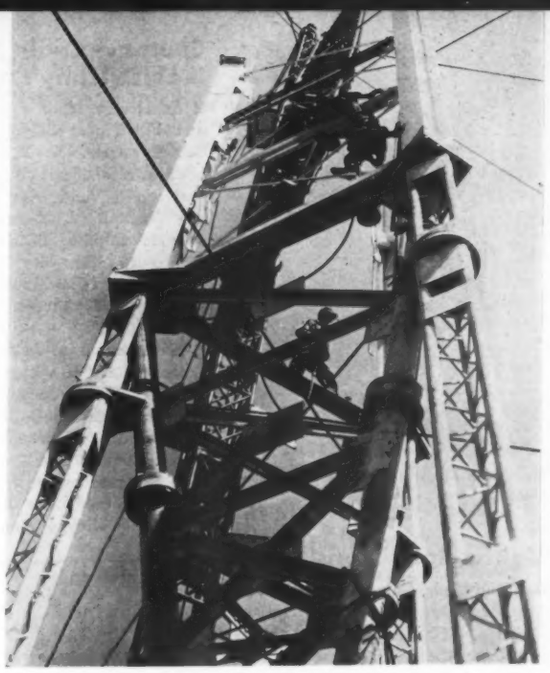
Welding operations kept well ahead of schedule and field erection. Close to 11,000 pounds of Lincoln Electric's Jetweld were used in manually welding flanges, platforms, and wing plates to the leg sections. Some heavier flanges required as much as 40 pounds of electrode and 40 to 50 passes through the bore. The electrode, with a heavy refractory coating containing powdered iron, has a 50 per cent higher deposition rate using ac welding current.

Tower Protection

The structure is guyed at levels of 290, 650, 1,040, and 1,340 feet by three pairs of prestressed galvanized bridge-strand cables. In all, there are 24 guys which use 28,690 feet of cable. The top three sets are anchored 950 feet from the base of the tower; the lower set is 520 feet from the base. Each cable is moored in a heavily reinforced concrete structure set in the ground.

To protect the structure from wind, lightning, or electrical interference, guy cables are insulated from the leg attachment lugs and from the heavy cast-steel mounting eyes at the anchor points. The design will provide more than a margin of safety against wind loads of 60 pounds per square foot against the top 780 feet of the tower, and 40 pounds per square foot against the lower half. These wind loads are calculated for flat surfaces, and the use of round sections for the legs actually reduces their effect by a third.

Two antennas surmount the tower. One is a 79-foot RCA 14-layer supergain for Channel 13, and above it is a 73-foot twin for Channel 9. Four 6⅛-inch coaxial cables which serve the antennas have a combined length of 6,500 feet, plus another 2,000 feet which runs from the transmitters to the tower. The height of the tower will give TV transmitters increased range and coverage, since the line-of-sight distance from the top of the tower to the horizon is approximately 60 miles in all directions. THE END



Workmen secure two legs and bracing of a section to the tower. When flanges are bolted, the remaining leg will be hoisted into place and the bracing bolted to its wing plates.

DESIGN

Engineered to deliver maximum torque — with minimum size — ROCKFORD CLUTCHES provide abundant brawn, without unnecessary bulk. Spring-loaded and over-center, single or double-plate, or multiple-disc types fit compactly into product designs. If your project calls for a drive that *must* fit neatly into limited space, consult ROCKFORD clutch engineers — while your size problem still is on the drawing board.

Send for This Handy Bulletin

Shows typical installations of ROCKFORD CLUTCHES and POWER TAKE-OFFS. Contains diagrams of unique applications. Furnishes capacity tables, dimensions and complete specifications.

ROCKFORD CLUTCH DIVISION
BORG-WARNER
314 Catherine Street, Rockford, Illinois

ROCKFORD CLUTCHES

"You'll get a WHALE of a lift - wi' McKISSICK!"

McKISSICK
Extra Heavy
CONSTRUCTION BLOCKS

Alloy cast steel sheaves. Flame hardened, machine grooved to proper line size. Available for any size wire line.

Bronze bushed blocks for medium speeds, roller bearing blocks for high speeds and reduced friction loss in multiple sheave string-up.

McKISSICK

McKISSICK PRODUCTS CORPORATION
Box 2496 Tulsa, Oklahoma

The Umeco Model 100 transit weighs only 9 pounds.

Lightweight Transit

■ A lightweight imported transit is available through Umeco Optical Division, 465 California St., San Francisco, Calif. The Umeco Model 100 5-inch Survey Transit weighs 9 pounds and is particularly recommended by the company for work in mountainous country and for other construction survey work requiring a precision instrument.

The instrument has a 5-inch-diameter horizontal circle and a 4½-inch-diameter vertical circle. Both read to 30 minutes and have verniers reading to 1 minute. The 9-inch telescope has a 23-power magnification and is equipped with stadia lines at a fixed 1:100 ratio.

The transit is made in Japan under American supervision and to American standards. The instrument is tested and adjusted by responsible agencies before being shipped from overseas.

For further information write to the company, or use the Request Card at page 18. Circle No. 435.

Vibrating Device Moves Bulk Materials

■ A new vibratory device that moves bulk materials by breaking up arching and jamming in bins, hoppers, chutes, feeders, and other places where bulk materials hang up, is announced by Viber Co., 726 S. Flower St., Burbank, Calif.

The AiroViber rotary-vibration device is recommended for loading, unloading, moving, grading, or separating materials. It can also be used for vibrating tables or platforms, sorting, and many other applications.

AiroViber has only one moving part. It performs at high or low temperatures and does not require lubrication or periodic maintenance.

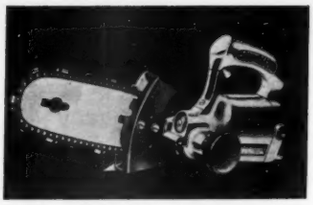
The one moving part is a steel ball. An air jet blows it at high speed around a ground and hardened steel track in the housing. The weight of the ball develops a strong centrifugal force, which the vibrator transmits through its mounting into the object to be vibrated. Compressed air enters through a small tangential jet which increases the air velocity. It exhausts through one side, with special provision for deadening the exhaust noise.

For further information write to the company, or use the Request Card at page 18. Circle No. 407.

Compact Chain Saw Is Electrically Powered

■ An electric chain saw, just introduced by Porter-Cable, 40 Exchange St., Syracuse, N. Y., weighs 7½ pounds, measures 16 inches over-all, and can be held with one hand in any position. The Model 128 limb saw is suitable for cutting large beams to size, clearing woodlots, cutting cord and pulpwood, and clearing land of trees, saplings, and underbrush.

A Universal ac-dc 115-volt motor powers the saw, which has a hardened-steel cutter bar with an Oregon chipper chain that runs at 1,100 feet per minute. Hardened steel and bronze worm gears, and precision ball bearings have been used in its manufacture. The housing is of aluminum alloy with a loop handle and a trigger finger switch.



The Porter-Cable Model 128 limb saw.

For further information write to the company, or use the Request Card at page 18. Circle No. 361.

Automatic Lubrication For Air-Brake Trailers

■ A folder describes the Lincoln air-operated Multi-Lubers that provide automatic controlled lubrication for transport equipment, and particularly for giant tandem Fruehauf trailers and all other tandem spring-suspended trailers equipped with air brakes.

The literature has a diagram describing the installation and operation of the system. The Multi-Luber lubricating mechanism is installed under the trailer and is connected to a 4-gallon fuel reservoir and to the bearing being served. It is actuated, each time the air brake is applied, by an air line connected between the relay valve on the trailer and the air diaphragm of the braking system, and to the air cylinder of the Multi-Luber.

To obtain this literature write to Lincoln Engineering Co., 5702-24 Natural Bridge Ave., St. Louis 20, Mo., or use the Request Card at page 18. Circle No. 426.

You can always depend on

There are many uncertainties in the contracting business, but equipment performance does not have to be one of them. The right *types* of equipment, dependable *makes* of equipment, and proper preventive maintenance go far to forestall trouble and insure profitable contracts.

When choosing tractor-shovel equipment, you'll be wise to pick "PAYLOADER". First, because you can be certain that whatever "PAYLOADER" you choose, it will be a thoroughly job-proven model with thousands in service throughout the world. Second, because you can select the proper size and type you need from the complete "PAYLOADER" line. Third, because your "PAYLOADER" Distributor is one of the best in the business, with complete parts and service facilities to keep your "PAYLOADER" profitably productive.

There's a proven model to fit your job!

1-1 1/3 cu. yd. four-wheel-drive

1½-2 cu. yd. four-wheel-drive

14-19 cu. ft. rear-wheel-drive

¾-1 cu. yd. rear-wheel-drive

1-1 1/3 cu. yd. rear-wheel-drive

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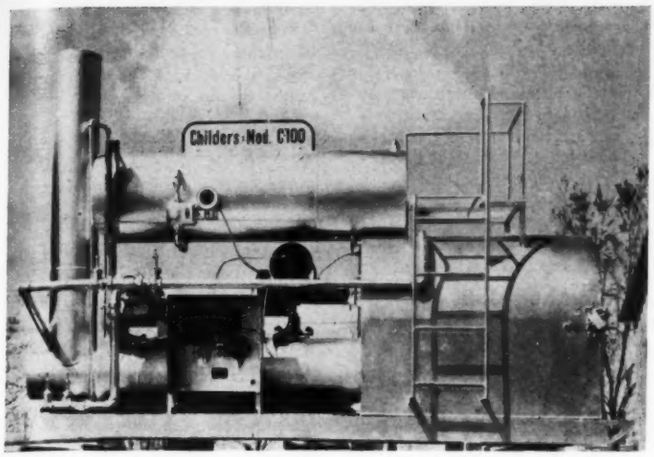


The Childers Model C-100 automatic circulating hot-oil heater heats up to 150 tons of asphalt per hour. ►

New Hot-Oil Heaters For Asphalt Plants

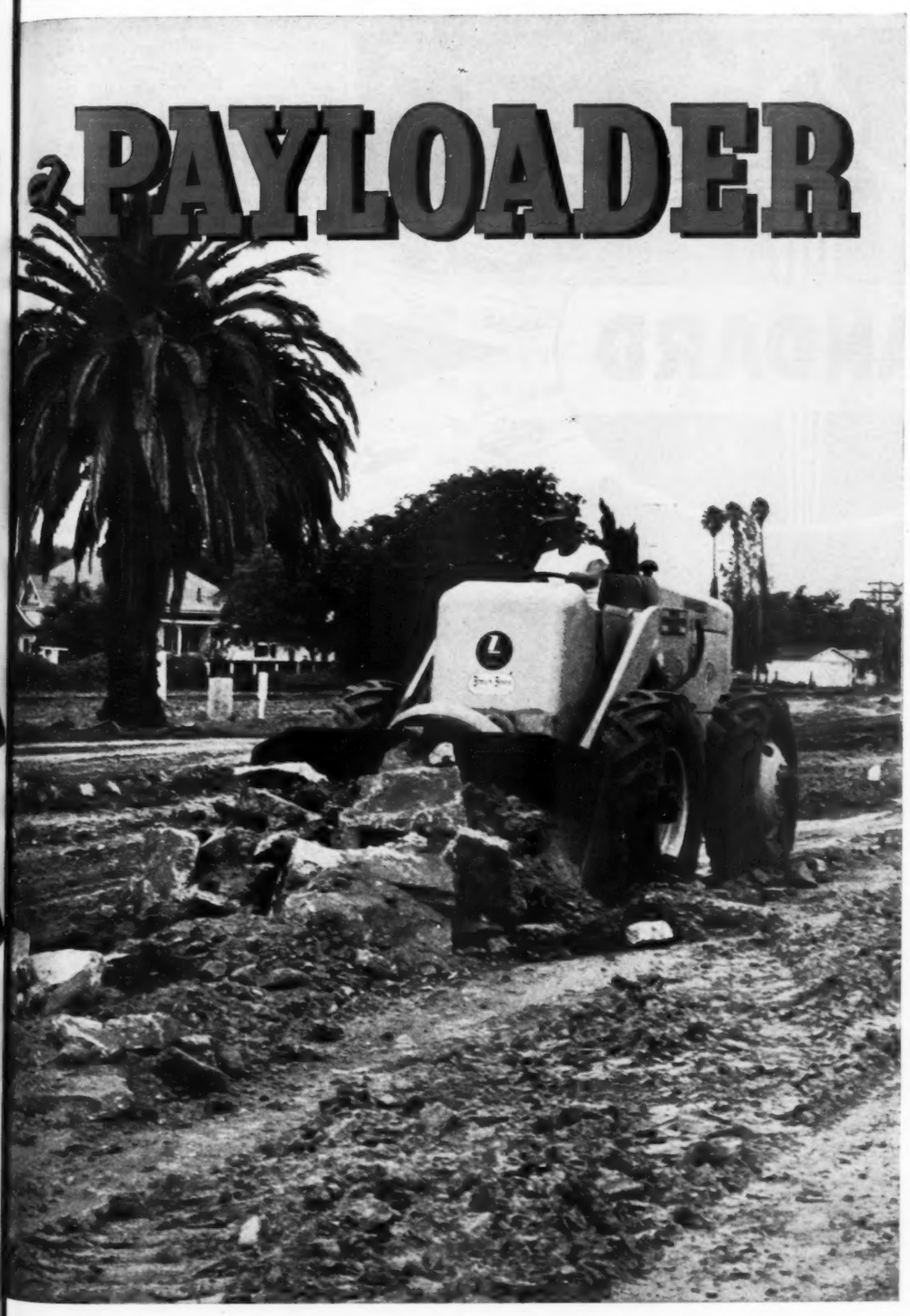
■ A new line of oil heaters, designed for fuel economy in asphalt plants, is announced by W. L. Childers Welding & Machine Works, 605 Euclid Ave. N. W., Albuquerque, N. Mex. Instead of using steam as a heat-transfer medium, the Childers automatic circulating heaters use No. 1, No. 2, or No. 3 fuel oil, distillate, or natural gas as a fuel.

The principle of operation is simple. A gun-type burner jets the flaming fuel into a combustion chamber that is almost completely covered with a jacket enclosing the oil. A similar jacket enclosing more oil covers the exhaust vent system except for the stack itself. Thus as the hot gases caused by combustion rush toward the open air, more and more heat is withdrawn from them into the oil. The final exhaust gases are only about 100 degrees F hotter than the oil they have been heating.

The heated oil, meanwhile, is being circulated by a 3-hp pumping unit, at 300 to 500 degrees F, into the coils or other apparatus for heating the asphalt.

The line includes four models with heating capacities ranging from 15,000 to 150,000 gallons, including storage as well as asphalt-plant heating. Models are offered mounted on skids or wheels.

For further information write to the company, or use the Request Card at page 18. Circle No. 448.



Hose Couplings Have Built-In Check Valves

■ A complete line of quick-seal leak-proof hose couplings with built-in single or double check valves is now made by Titeflex, Inc., 500 Frelinghuysen Ave., Newark 5, N. J. The Titeflex quick-seal hose coupling has found application particularly in high-pressure heavy-flow fluid lines. A simple construction makes the hose line leakproof the moment the coupling is closed, and seals it tighter as higher pressure is built up inside. In addition, a full-swiveling feature prevents the hose from kinking.

This basic coupling structure has now been combined with either a single or double check valve, producing a coupling that closes either one or both ends of the fluid line the instant the coupling is opened. The built-in check valve eliminates the need to shut down pumps or close valves in order to break the connection, and makes it unnecessary to drain lines prior to uncoupling.

The quick-seal check-valve couplings are made in eight standard stock sizes from ¼ inch to 2 inches, as well as ten sizes from 2½ inches to 12 inches, which are available on special order.

For further information write to the company, or use the Request Card at page 18. Circle No. 481.

Tandem Rollers Feature Torque-Converter Drive

■ A catalog on its variable-weight tandem rollers featuring torque-converter drive is available from The Galion Iron Works & Mfg. Co., Galion, Ohio. The Roll-O-Matic drive used on Galion rollers utilizes a torque converter made by the Allison Division of General Motors. The literature states that with this drive it is possible to save as much as 25 per cent in fuel, prolong engine life 35 per cent, and increase the life of the forward-reverse clutches from 40 to 50 per cent.

It is pointed out that the elimination of gear shifting and the master clutch makes the Roll-O-Matic-drive tandem roller simple to operate, with a smooth reversing action. Any selected roller speed is closely maintained—uphill, on the level, downhill, and around curves.

Other construction features of the rollers are illustrated in the catalog. Complete specifications are listed.

For further information write to the company, or use the Request Card at page 18. Circle No. 414.

Chevrolet pickup trucks may now be equipped with the new Napco Powr Pak 4-wheel drive.

Four-Wheel Drive for Smaller Trucks

■ A new Powr Pak 4-wheel-drive unit for Chevrolet ¾ and 1-ton trucks is announced by Northwestern Auto Parts Co., 834 N. 7th St., Minneapolis, Minn. This new unit is now in production, along with the original Napko Powr Pak 4-wheel drive for Chevrolet 1½ and 2-ton trucks.

The new model answers the increased demand for a 4-wheel-drive Chevrolet pickup truck. This type of vehicle is suited for many construction uses, including transportation of personnel and equipment for road and building construction, surveying, and geophysical work.

For further information write to the company, or use the Request Card at page 18. Circle No. 460.

All-Weather Cabs For Tractor-Loaders

■ All-weather cabs custom-built for all Hough Payloader tractor-shovels are covered in a folder from the Campbell Detachable Cab Co., Wauconda, Ill. The brochure emphasizes that because Campbell cabs protect the operator from cold, snow, sleet, wind, rain, dust, and sun, he is able to do more and better work.

Features of the cabs include steel-tube frame construction, safety glass installed in locking rubber channels, and easy cab removal. A skylight window allows the operator to see the digging bucket at top positions without having to lean forward.

The company also makes cabs for most crawler tractors.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 402.

Plan New Ditcher to Dig 15-Foot Trench to A 30-Foot Depth

■ A ladder-type ditching machine capable of digging a ditch 15 feet wide and 30 feet deep is now being designed by Gar Wood Industries, Wayne, Mich. The new giant ditcher, Gar Wood Buckeye Model 435, is designed for the excavation of intercepting and outfall sewer trenches, water-diversion aqueducts, and similar ditches. The manufacturer reports that the ditcher will sell for about half the cost of conventional excavating equipment now used for this type of ditching work.

Over-all approximate dimensions of the new ditcher are: length, 81 feet; height, 15 feet; and width, 12 feet, excluding the dirt discharge conveyor. Its weight will be about 65 tons.

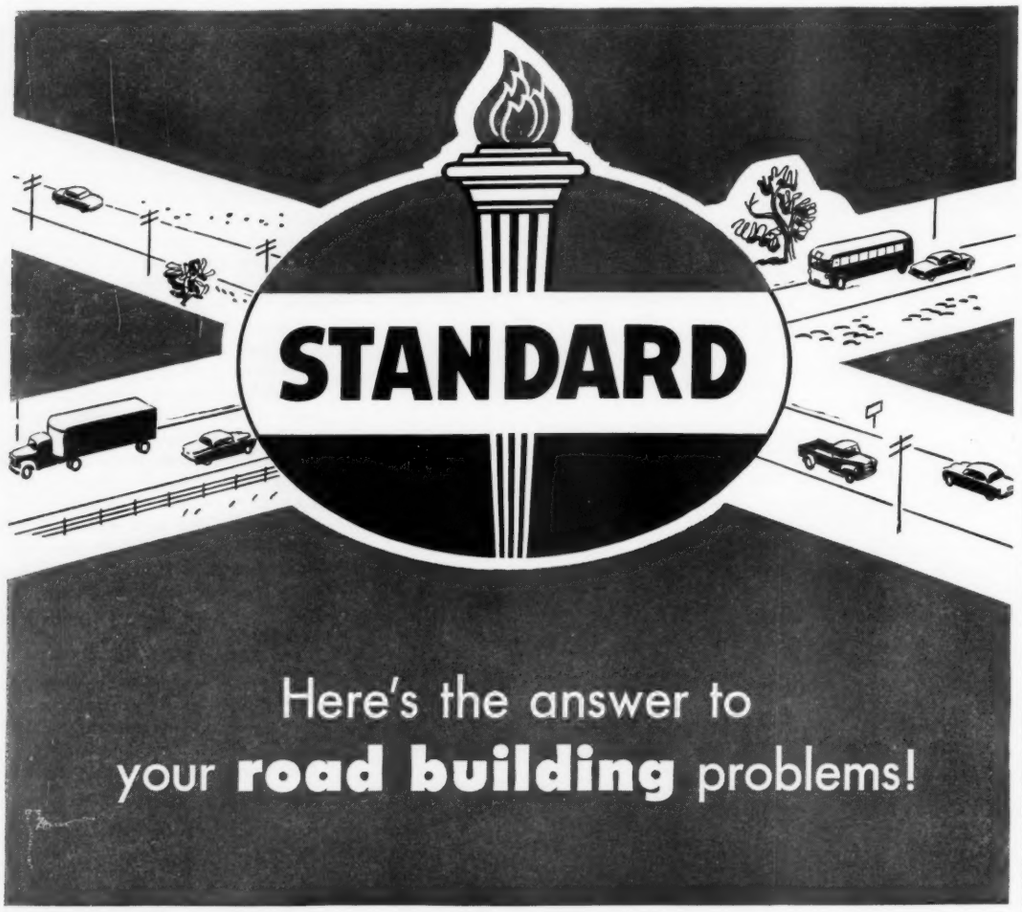
The machine will be crawler-mounted at the digging end and supported by rubber-tired wheels in front. A diesel engine with torque converter will supply power to the crawlers and the digging drive. Hydraulic power steering will be another feature.

Road-Material Scale Has Quick Set-Up Feature

■ A truck scale suitable for weighing road material at job setups, stockpiles, crushing plants, and places where it will be needed for only a short period of time, is shown in a leaflet from the Winslow Scale Co., P. O. Box 1198, Terre Haute, Ind. The Contractors' Special road material scale can be set up and placed in use within a few hours. It can be hauled partially dismantled to the job site on a truck.

Models listed include 15 to 30-ton-capacity units, with scale depths of 15 to 25 inches. The scale can be set on the ground with slabs or large timbers serving as footings under each end.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 461.



● Add advantages of asphalt road construction or resurfacing . . . quick laying, easy upkeep, long service, low cost . . . to the availability of Standard Oil asphalt. That's the answer to your road building problems.

With five asphalt-producing refineries located throughout the Midwest, Standard offers you savings in shipping time and costs. Call your local Standard Oil office.

STANDARD OIL COMPANY STANDARD (Indiana)

HUNT PROCESS
CONCRETE CURING COMPOUNDS
NOW AVAILABLE IN SOUTHEAST
Write for complete information
HUNT PROCESS CORP., SOUTHERN
RIDGELAND, MISSISSIPPI
Western Factory & Main Office
HUNT PROCESS COMPANY, INC.
7012 Stanford Ave., Los Angeles 1, Calif.

Ten-foot sections of ¾-inch pipe are used to jet a total of 180,000 cubic yards of sand into a 70-foot-deep peat deposit on the Ohio Turnpike. Peat forced out of the bog by the heavier material is loosened by a dragline.

Sand Displaces Peat On Turnpike Section

A peat bog running to a depth of about 70 feet for an estimated 350 feet along the line of grade presented a challenge to job contractors on a 14-mile section of the Ohio Turnpike. Located in the western part of the stretch, this was the most tricky in the series of peat bogs encountered on the 241-mile route of the turnpike.

Under the contract, peat deposits more than 12 feet deep had to be removed. The contractor, V. N. Holderman & Sons, Inc., Columbus, Ohio, disposed of the smaller peat deposits with scrapers, dozers, and draglines. The job of removing the largest peat deposit was done by a Madisonville, Ky., firm, Ruby Construction Co.

A total of 180,000 cubic yards of sand was hauled from borrow pits within a radius of 8 or 9 miles and dumped at the edge of the bog. Sand was jetted into the bog through ¾-inch double-strength pipe, cut in lengths of 10 feet and inserted at regular intervals in the fill. Water for jetting was obtained from a well drilled alongside the fill.

The greater weight of the sand forced the peat out of the bog, and a dragline, operating from the top of the fill, kept the peat loosened to stimulate the heaving motion. As the operation continued, some of the peat boiled out at a considerable distance from the fill. The peat was entirely displaced by sand, leaving the fill material resting on clay. Settlement gages installed in the area will enable turnpike authorities to keep a continuing check on the fill.

Roebling Appoints

New district manager at Cleveland, Ohio, for the wire and cold-rolled products division of John A. Roebling's Sons Corp., Trenton, N. J., is Edwin F. Whitehill, who has been covering important Roebling accounts in Michigan and Indiana for the last three years. He has been an employee of Roebling since 1949.

Machinery for Concrete And Asphalt Construction

■ A new folder describes the varied line of machinery for concrete and asphalt construction made by the White Mfg. Co., Elkhart, Ind. Concrete equipment includes the new White 36-inch-diameter troweler with retractable rubber-tired wheel and safety throttle control that stops the blades if the operator accidentally drops the handle. The literature also shows a line of flexible-shaft powered vibrators for concrete.

Asphalt equipment includes stationary and portable asphalt plants of varying capacities. Asphalt heating kettles, a combination tool heater and tar kettle, a self-heating smoothing iron, and kerosene torches are other products in the White line.

To obtain this literature write to the company, or use the Request Card that is bound in at page 18. Circle No. 430.

Battery Chargers

■ A line of compact automatic chargers for 6-volt storage batteries has been announced by the Electra Mfg. Co., 2537 Madison, Kansas City, Mo.

A battery can be fully charged by plugging the Electra charger into any 110 to 120-volt ac outlet and snapping the charger clips on the battery terminals. It is not necessary to remove the battery from the vehicle. Three models are available, in outputs of 10, 6, and 4 amps.

For further information write to the company, or use the Request Card that is bound in at page 18. Circle No. 485.

IH ON THE SUPER HIGHWAYS

Carving out the West Virginia Turnpike

INTERNATIONAL PAYSCRAPERS and crawlers help contractors carve 88 mile roadway through mountainous terrain.

With the opening of the new West Virginia Turnpike, travel distance between Charleston and Princeton shrinks from 110 to 88 miles, a 20% reduction in mileage over a two-lane road that makes driving through the mountains faster and far safer.

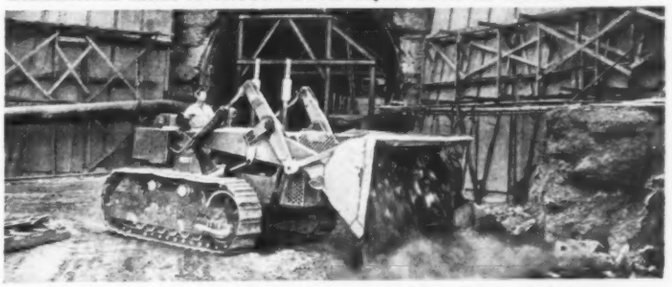
While not as long as some of the other new Turnpikes, this $96,000,000 road-building venture was a rugged test for contractors from the outset with original estimates of 25,000,000 cubic yards of earthmoving increased by mountain slides that required moving more than 500,000 yards of dirt for each mile of highway built in many locations.

This mountainous setting provided contractors with more concrete evidence that INTERNATIONAL tractors—both rubber-tired and crawler—really pay off big when the chips are down . . . when greater power, payload moving capacity and maneuverability are needed in the tight spots.

It takes just 10 seconds to get the low-down on International's greater earthmoving earning power. Simply call your International Industrial Distributor today and he'll demonstrate any of the great INTERNATIONAL tractors with matched equipment right on your job tomorrow.

INTERNATIONAL HARVESTER COMPANY
CHICAGO 1, ILLINOIS

A MOUNTAIN SLIDE nearly doubled the excavation work of the L. S. Coleman Company, St. Albans, West Virginia, in Kanawha County, but two INTERNATIONAL TD-24s and two INTERNATIONAL Model 75 PAYSCRAPERS helped remove the slide in short order.



TITAN IN A TUNNEL. Bates and Rogers Construction Corp., Chicago, find the INTERNATIONAL TD-18A crawler and 3 cu. yd. DROTT Skid-Shovel a great all-around performer in constructing half-mile tunnel between Standard and Fairfield, West Virginia.

LATROBE LIKES 'EM. *"We put our 3 TD-24s on the tough jobs because of the extra power and speed, their all-around efficiency and stamina,"* says John Sobotta, grade foreman for Latrobe Road Construction Co., Latrobe, Penn., contractors on 3,000,000 cubic yards of excavation and embankment in Raleigh County.

INTERNATIONAL HARVESTER

INTERNATIONAL®

FOR EVERY MOVE IN EARTHMOVING

Equipment moves 12 tons of limestone in 90 minutes and 1,100 pieces of tile in 25 minutes for new store

Man-Hours, Money Are Saved By

A pair of canvas slings, suspended from the forks of a Clark fork-lift truck, easily and economically lift three 450-pound blocks of limestone from a trailer. The location is the site of the new Wanamaker store in Wynnewood, Pa.

A SAVING OF from 440 to 605 man-hours in one operation—unloading and storing exterior facing stone—was made by Robert W. Weber Co., Inc., Philadelphia, Pa., mason contractor on the $3 million three-level Wanamaker store now nearing completion in Wynnewood, Pa.

The time-cutting and cost-cutting material-handling method used for the 12 freight cars of Monsanto limestone was also extended to the 6 cars of brick, 4 cars of unglazed tile, and one car of glazed tile which went into the building. Two Clark fork-lift trucks, each with a 4,000-pound capacity, were used to handle the materials. When not moving the materials, they were used for general warehousing duties at Weber's main shop.

Heavy Pallets

With the fork trucks, a crane, and three men, moving a 12-ton load of limestone took only 5 man-hours. The actual time needed by this combination of men and equipment came to only 1½ hours. Using four men and a crane to remove the blocks from a trailer and store them would have required 16 man-hours.

The limestone facing blocks, each weighing 450 pounds, were delivered in pallets of three. As they were brought to a siding about eight miles from the job site, the pallets were transferred from the freight cars to one of the company's eight trailers by a crane. The blocks were then hauled to the site, where they were unloaded from the trailer by a fork truck. The unit was equipped with balloon tires to allow it to move easily over the rough ground at the construction site. For the job of unloading the trailer, the truck was equipped with a pair of canvas slings suspended from the forks. The slings were guided around a group of three blocks by two men working on the trailer.

When the forks were raised and the stone swung clear of the trailer, the unit drove to a nearby storage rack made of 4 x 6 scrap pieces. Two men guided the sling as the blocks were set in place, thus preventing stockpiled stone from being chipped. Each stone was cut for a certain place in the wall, and individual and on-end storage was necessary. As blocks were needed, they were brought manually to a crane lift which positioned them in the exterior of the building.

Palletized Tile

Similar time and labor-saving results were obtained by Weber in handling tile for the structure. By arrangement with the suppliers, the

Attention Riggers!

Here's a complete line of dependable jacks for every lifting, lowering, or pushing job

5 TONS	10 TONS	15 TONS	20 TONS
(No. 516 MT)	(No. 1022)	(No. 1522)	(No. 2028)

Every Duff-Norton Ratchet Jack is guaranteed at full capacity for loads applied to either head or foot lift!

Regardless of the job at hand, whether it's skidding a heavy piece of machinery, lowering a heavy machine tool, lifting or leveling a platform or table, there's a precision-made Duff-Norton ratchet jack of the correct size to do your job faster, easier and with less effort.

Duff-Norton ratchet jacks are designed and built to give long and trouble-free service with a minimum of maintenance.

See your distributor regarding detailed specifications on any of these jacks or write for your free copy of a new 40-page Jack Manual, Catalog No. 204-S listing the complete line. Write to the world's oldest and largest manufacturer of lifting jacks, the Duff-Norton Manufacturing Co., P. O. Box 1889, Pittsburgh 30, Pa. Canadian plant—Toronto 6, Ontario.

DUFF-NORTON Jacks

"Giving Industry A Lift Since 1883"

Tough Enough
. . . TO STAND UP UNDER SEVERE IMPACT AND ABRASION!
MANGANAL
U.S. Patents 1,876,738 - 1,947,167 - 2,021,945
11%-13½% MANGANESE-NICKEL STEEL
HOT ROLLED PLATES
Reduce Downtime on
TRUCK BOTTOMS
LAST MUCH LONGER THAN NEW BOTTOMS, TOO!
"HOW TO DO IT" DETAILS SENT ON REQUEST
Mill Depot Stocks: Newark • Wilkes Barre (Forty-Fort) Indianapolis • Chicago • Minneapolis
STULZ-SICKLES CO.
NEAREST DISTRIBUTOR UPON REQUEST
SOLE PRODUCERS 92 N. J. RAILROAD AVE. NEWARK, N. J.

ved By Material-Handling System

Palletized hollow partition tile is transferred by a Clark unit from freight car to trailer for delivery to the job site. The truck has solid tires for easy maneuvering in the boxcar. Time saved by the truck made up for the extra cost of palletizing.

company received tile on pallets and, although this is more expensive, the additional cost was offset by the time saved in handling. In 25 minutes or less, 850 pieces of 8-inch or 1,100 pieces of 6-inch hollow partition tile could be unloaded from the trailers.

The company's second Clark unit, this one equipped with solid tires for easy maneuvering in boxcars and warehouse, drove into the freight car and transferred the bound material to a trailer. At the site, the pallets were lifted from the trailer by another fork truck and stored in tiers near the building. As tile was needed, pallets were brought into the building and deposited as near as possible to the masons by the fork lift.

Tile which was not used immediately was stored in Weber's warehouse. There, pallets are tiered to a height of 20 feet or more by the truck, increasing utilized storage space by over 50 per cent. Previously, tile was received in cartons containing 3 to 6 pieces. This required manual handling several times—from car to trailer, trailer to job-site storage, storage to masons. By receiving the material in pallets and using the fork lift for handling, Weber cut handling time and handling wages on this job by more than 50 per cent.

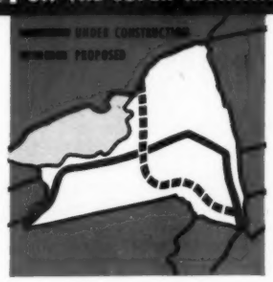
Brick, while not yet supplied palletized, was delivered to the rail siding in 720-brick pallets weighing more than 3,500 pounds. These were transferred manually from freight car to trailer. Instead of handling the brick manually from delivery point to masons, however, Weber cut work time by having a fork truck unload pallets of brick from the trailer. As with the tile, brick was stored outside and brought to the building by the fork-lift unit when needed. THE END

Film Shows Construction Of Rubber-Asphalt Roads

A completely remade version of the film, "Stretching Highway Dollars with Rubber Roads", shows how rubber asphalt is mixed in a plant, how the material is laid, and a number of tests devised for the rubber paving.

Scenes made in the rubber road laboratory of the Natural Rubber Bureau include closeups of research tests. The 42-minute 16-mm sound film is available without charge to groups working in the highway field. Bookings can be made by writing the Natural Rubber Bureau, 1631 K. St. N. W., Washington 6, D. C.

IH ON THE SUPER HIGHWAYS



Pushing Completion of New York Thruway

Contractors get big assist from INTERNATIONAL TD-24s as $823 million super road enters final construction stage.

250 LOADS IN 10 HOURS is the production pace maintained by these 3 TD-24s and scrapers for the Savin Construction Corp., Hartford, Conn., on one of four contracts the firm has on the Thruway in Greene County. Savin uses 7 TD-24s to move 6 million cubic yards.

The New York Thruway is now a year from completion . . . 427 miles long with four authorized extensions totaling another 128 miles . . . $823 million projected construction cost . . . approximately 80,000,000 cubic yards of rock and stone to be moved.

Road builders on the Thruway from New York City to Buffalo have banked on INTERNATIONAL TD-24s to keep them on schedule . . . clearing the right of way . . . pulling bigger scraper loads faster than any other crawler . . . pushing elevating loaders . . . push-loading like no other crawler can . . . leveling and compacting fills.

SUPT. RATES TD-24s TOPS. *"Our* INTERNATIONAL *TD-24s and scrapers deliver paydirt faster than any others on the job—usually more than 100 loads each in 10 hours,"* says J. P. Connor, superintendent for Smith Construction Company, Pelham, N. Y., subcontractors of 1,500,000 cubic yards of earthmoving.

BEARCATS IN THE BORROW PIT are these two INTERNATIONAL TD-24s used by Arute Brothers, Inc., New Britain, Conn., on two Thruway prime contracts totaling $3,082,905 in Monroe County. Four TD-24s are used for push-and-pull loading and for leveling the fill.

Whether you handle big Thruway contracts or do custom work, your International Industrial Distributor is the fellow for you to call today for demonstration proof of how the complete INTERNATIONAL line of nine crawler and rubber-tired tractors can cut your costs.

INTERNATIONAL HARVESTER COMPANY
CHICAGO 1, ILLINOIS

INTERNATIONAL HARVESTER

INTERNATIONAL®

FOR EVERY MOVE IN EARTHMOVING

This is what happens when an inadequately built highway develops a little soft spot. This break will get progressively worse, possibly even to the point where it can cause a serious accident, unless the area is dug out and properly reconstructed.

Uniform Surface Contact Spells Longer Road Life

By RAY DAY

THE MEN WHO DESIGN, build, and maintain highways and roads have long been aware of the importance of uniform load contact. They know that the punishment a road gets determines its life. And they know that their only answer to the variable load contact of heavy trucks and other vehicles is strong smooth roads and their careful maintenance.

The basic components of uniform load contact are (1) a velvet-smooth surface, underlaid with subbase and subgrade materials sufficiently strengthened to resist weakening under a load, and (2) adequate springing of trucks and other highway vehicles to hold constant surface pressure. The second factor, obviously, is not within the province of highway engineers and contractors. The first, however, is their whole job when it comes to highway construction.

State highway departments are beginning to pay more and more attention to achieving uniform thickness in each course of construction, which in turn achieves more uniform distribution of load. When California, for example, puts down a cement-treated base for a modern limited-access freeway, inspectors with string lines check the thickness of that course for conformity to tolerances which are practically flat.

One Needs the Other

Both adequate base strength and smooth riding surface are important in road construction. An inadequate base, no matter how smooth the surface, will not stand up under the terrific pressures of today's traffic; nor will a rough surface, even if the base course is good, be able to resist the damaging effect of heavy and variable loads.

The proper blending of paving mix is only part of the job of providing smooth riding surfaces; maintenance is just as important. The smallest rough spot on pavement grows

Concrete mixer drum turns smoothly on TIMKEN® bearings despite cement dust, sand and water

THE drum of this portable Jaeger 16-S Speedline mixer turns smoothly because Timken® tapered roller bearings on the drum shaft *roll* the load instead of slide it. As a result, the mixer runs smoother, lasts longer, requires less maintenance.

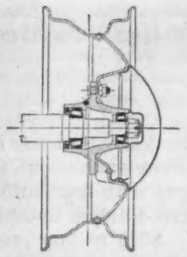
And although this 16-S Speedline mixer holds up to 2400 pounds of mix, none of the cement dust, sand and water it works in can get into the bearings. Reason: Timken tapered roller bearings hold shafts and housings concentric, making closures more effective. Lubricant stays *in*, dirt and water stay *out*.

There's no end-play in the drum shaft because Timken bearings are tapered—take *both* radial and thrust loads. They're also used in the wheel hubs of axle assemblies manufactured by the United Manufacturing Co.

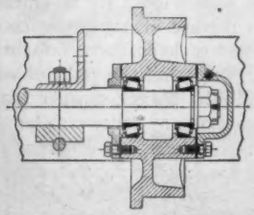
When the mixer is jouncing over rough terrain behind a truck, the Timken bearings take the shock loads with ease. Rollers and races are case-carburized to give them a tough, shock-resistant core under a hard, wear-resistant surface.

To get steel good enough for Timken bearings, we have to make our own. We're the only bearing maker in the U. S. who does. It's another reason to always specify Timken bearings for longer life, less friction, minimum maintenance. The Timken Roller Bearing Company, Canton 6, Ohio. Canadian plant: St. Thomas, Ont. Cable address: "TIMROSCO".

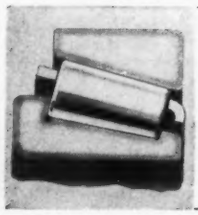
This symbol on a product means its bearings are the best.



How the **UNITED MANUFACTURING COMPANY** mounts the wheel hubs on axle assemblies using Timken tapered roller bearings to take the heavy shock loads.



How **JAEGER MACHINE COMPANY** mounts the drum roller shaft of its 16-S Speedline Mixer on Timken tapered roller bearings for longer life, less maintenance.



GREATER LOAD AREA

Because the load is carried on the *line* of contact between rollers and races, Timken bearings carry greater loads, hold shafts in line, wear longer. The Timken Roller Bearing Company is the acknowledged leader in: 1. advanced design; 2. precision manufacturing; 3. rigid quality control; 4. special analysis Timken steels.

TIMKEN

TRADE-MARK REG. U. S. PAT. OFF.

TAPERED ROLLER BEARINGS

NOT JUST A BALL ○ NOT JUST A ROLLER ▭ THE TIMKEN TAPERED ROLLER ▭ BEARING TAKES RADIAL ↓ AND THRUST →○← LOADS OR ANY COMBINATION →○←

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...areful preparation of subgrade, subbase, and pavement ...ourse is key to smooth, strong, long-lasting highways

quickly under traffic. Pavement damage on both sides of a rough spot is evidence of the need for constant maintenance of heavily traveled roads. Forward-looking states are formulating maintenance policies which call for prompt repairs before broken spots can spread.

Highway engineers generally agree that it is important to prevent segregation in both pavement-mix and subbase materials. And there is a growing school of opinion which considers it vital to achieve the proper blending of subgrade soils. These engineers argue that if uniform particle dispersion adds strength to a concrete mixture, why will it not add strength to a soil structure.

Much equipment is being made available for the preparation of this subgrade soil. New methods are being put to use. Just as measurement of the strength of subbase materials, their load-carrying characteristics, bearing values, PI ratings, and other important aspects has become a specialized field, so similar attention is being given to the proper blending of subgrade materials. The inevitable result of these efforts is that tomorrow's roads will be built to last much longer than those of yesterday or today.

Base Affects Surface

Lack of surface smoothness can very often be traced to insufficient care in finishing off subgrade and subbase courses. No matter how excellent a finishing spread is used, the pavement cannot be brought to its smoothest if the courses below have not been carefully prepared.

Smoothness, too, is still a relative thing, despite efforts to standardize tolerance requirements of deviation. Many specifications still are written around the old tolerance requirements of ¼ inch of deviation in 10 feet. This requirement does not guarantee a smooth pavement under all conditions.

(Concluded on next page)

This operation—preparation of the subbase under an airport taxiway—could well be duplicated on our modern highway construction projects. The subbase is being strengthened by adding water and carefully blending the mixture.

IH ON THE SUPER HIGHWAYS

Extending the Maine Turnpike

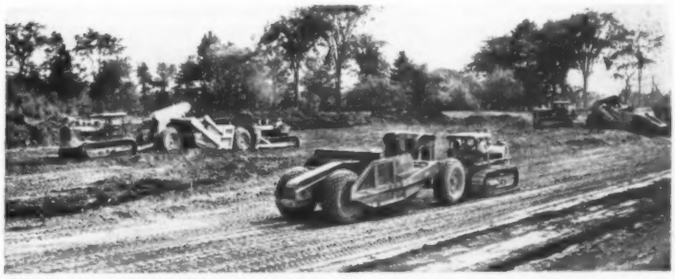
Contractors using fleets of INTERNATIONAL TD-24 crawlers to complete 67.5 mile Portland to Augusta addition

With traffic on the present Maine Turnpike running 10 years ahead of estimates, the pressure is on to complete the 67.5-mile Maine Turnpike Extension from the Portland by-pass to the outskirts of Augusta.

And contractors all along the Turnpike Extension are off-setting a six weeks' delay due to rain in early summer by using fleets of big 155 drawbar horsepower INTERNATIONAL TD-24 crawlers to make the dirt fly . . . hauling dense scraper loads . . . push-loading as no other crawler can . . . towing 50-ton compactors . . . every bulldozing job on the right of way from pioneering to finish grading.

Match the production of these INTERNATIONAL earthmovers against your present equipment tomorrow by calling your International Industrial Distributor today for your on-the-job demonstration.

INTERNATIONAL HARVESTER COMPANY
CHICAGO 1, ILLINOIS



DIGGIN' IN FOR DEMATTEO. *"After six weeks of rain it's mighty nice to see our TD-24s delivering 24 cubic yard payloads to help us get back on schedule"* reports F. L. Kirby, superintendent for DeMatteo Construction Company, Quincy, Mass. Eight TD-24s are on the job.

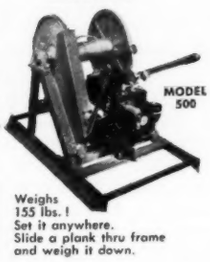
PACIN' THE BIG DIPPERS. Latrobe Road Construction Co., Inc., Latrobe, Penn. uses three TD-24s on its subcontract with Savin and Supt. F. E. Crowell states, *"The TD-24 is the only crawler, bar none, that's been able to keep ahead of our big shovel operations".*

IT'S TD-24s 9 TO 5. The Savin Construction Corp., East Hartford, Conn. uses 9 INTERNATIONAL TD-24s on its 10.585 section of the Turnpike to move 2,000,000 cubic yards of earth and 90,000 cubic yards of rock. Three TD-24s shown compacting a fill near Portland.

INTERNATIONAL HARVESTER
INTERNATIONAL®
FOR EVERY MOVE IN EARTHMOVING

HOIST BRICK—BLOCK
WHEELBARROW LOADS UP TO 500 lbs.

only $208.00



Includes 2½ H.P 4-cycle gasoline engine, rugged angle iron frame, drum with 200 ft. steel cable.

Weighs 155 lbs.! Set it anywhere. Slide a plank thru frame and weigh it down.

EASY, SAFE, ONE-MAN OPERATION

One man can easily operate using convenient, positive action brake and clutch levers — lift building materials, tools, equipment up to 500 lbs. at 100 ft. per minute lifting speed. Think of the jobs this can speed for you — at so little cost.

Swinging Roof Beam, 500 lb. capacity complete with pulleys, for use with R & G Model 500 Hoist, $92.00. WRITE FOR LITERATURE TODAY.

REIMANN & GEORGER, INC.
301 R & G BUILDING BUFFALO 3, N. Y.

Better construction of roads would eliminate the need for these signs announcing reduced axle-load limits during spring thaws. Strengthening of the road at the base-course stage of construction would help do away with the need for this annual reduction.

(Continued from preceding page)

The shock produced by fluctuating heavy loads, often exceeding the 18,000-pound theoretical axle-load maximum, has a way of ruining all but the very best highways. The variance in load distribution where full and empty trucks are concerned has a further deteriorating effect on road surfaces. A smooth road prevents vertical motion, does not induce dectructive forces, and is much easier on the vehicle.

Far-seeing highway department officials take these facts into account when drawing up specifications for highways and roads. They have seen that a road, like the proverbial chain, is as strong as its weakest link. That link may be the pavement, the subbase, or the subgrade.

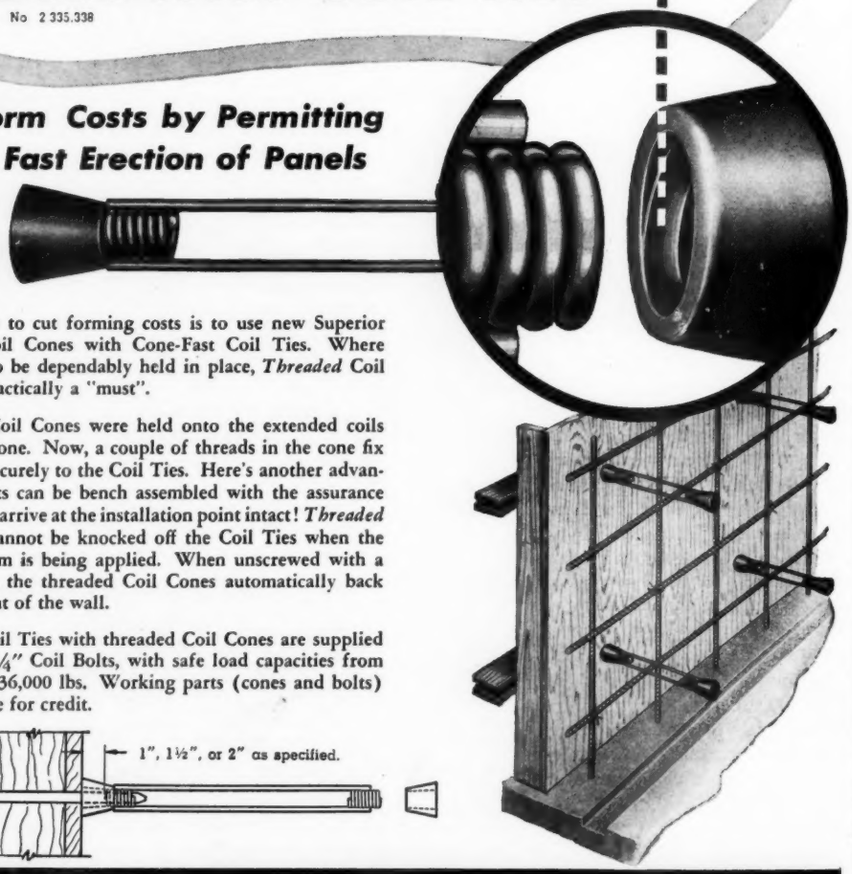
THE END

NEW!

THREADED CONES * for SUPERIOR CONE-FAST COIL TIES

Pat No 2 335.338

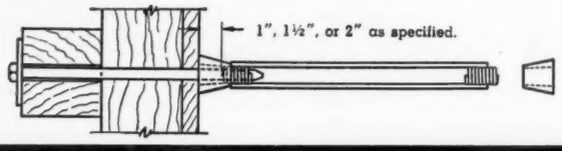
Cuts Form Costs by Permitting Extra Fast Erection of Panels



A direct way to cut forming costs is to use new Superior *Threaded* Coil Cones with Cone-Fast Coil Ties. Where cones have to be dependably held in place, *Threaded* Coil Cones are practically a "must".

Previously, Coil Cones were held onto the extended coils by friction alone. Now, a couple of threads in the cone fix Coil Cones securely to the Coil Ties. Here's another advantage . . . units can be bench assembled with the assurance that they will arrive at the installation point intact! *Threaded* Coil Cones cannot be knocked off the Coil Ties when the opposing form is being applied. When unscrewed with a cone wrench, the threaded Coil Cones automatically back themselves out of the wall.

Cone-Fast Coil Ties with threaded Coil Cones are supplied for ½" to 1¼" Coil Bolts, with safe load capacities from 5,000 lbs. to 36,000 lbs. Working parts (cones and bolts) are returnable for credit.

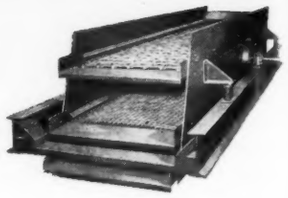


SUPERIOR CONCRETE ACCESSORIES, INC.

4110 Wrightwood Avenue, Chicago 39, Illinois

New York Office
1775 Broadway, New York 19, N. Y.

Pacific Coast Plant
2100 Williams St., San Leandro, Calif.



Vibrating Screens In Variety of Models

■ Two new expanded lines of vibrating screens are announced by the Bonded Scale & Machine Co., 2176 S. 3rd St., Columbus 7, Ohio. Bonded four-bearing eccentric-shaft screens are now available in 31 models, in single and multiple decks, in 3 x 8-foot to 5 x 14-foot sizes.

These screens are recommended for heavy ore and rock scalping, as well as for high tonnages in either wet or dry fine screening.

The second line includes 10 models of two-bearing, eccentric-weight general-purpose screens, in sizes of 2 x 4 feet to 3 x 8 feet. Offered with 1, 2, and 3 decks, the screens are available in open, covered, and totally enclosed models.

Literature covering both lines is available.

For further information write to the company, or use the Request Card at page 18. Circle No. 470.

Compressor for Mounting On Worn Crawler Tractors

■ A new bulletin on its recently introduced power-takeoff compressor is available from Le Roi Co., 1706 S. 68th St., Milwaukee 14, Wis. The 600-cfm compressor is designed for mounting on any leading make of crawler tractor.

The literature describes how the unit may be mounted on a crawler with weak and worn tracks and incapable of producing enough traction for dozing or scraping, to make a mobile source of air power that can be taken anywhere.

Views of the Model 600 CTM show the unit mounted on a Caterpillar D8 and an International Harvester TD-24, as well as unmounted and without the protective tubular steel frame. Specifications and a graphic representation of tool capacities are included.

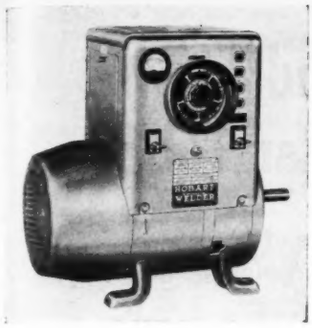
To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 423.

Protective Tarpaulin Of Reinforced Material

■ Tarpaulin made of Owens-Corning Fiberglas cloth bonded between two sheets of creped, asphalt-impregnated kraft paper is described in a folder from the Angier Corp., Framingham, Mass. The waterproof Brownskin Tarps are recommended by the manufacturer for protecting building materials, equipment, and tools in outdoor storage, and for use as windbreaks. They are made with triple-sewn seams, folded edges, and have brass grommets at 24-inch intervals.

Sizes listed range from 10 x 12 feet to 15 x 30 feet, with longer lengths available to order.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 469.



Welder and Power Plant Offered Without Engine

■ In order that contractors who depend upon electric power for many purposes can make use of their own power source, Hobart Brothers Co., Hobart Square, Troy 1, Ohio, is offering only the generator of its combination arc welder and power plant. The power engine is not offered with the generator.

The generator, which features a special selector panel in conjunction with a standard control panel that changes it from an arc welder to a 110/220-volt power plant and vice versa, can easily be directly coupled to a gasoline engine or driven from the power takeoff of a tractor, jeep, or truck with V-belts and grooved pulleys.

When used as a power unit, the generator will provide 110-volt single-phase 2-wire 60-cycle ac or 220/110-volt single-phase 3-wire 60-cycle ac. When used as an arc welder with the output selector panel in welding position, it makes available 60 to 80-volt ac with reactor in circuit to insure good welding characteristics. Therefore, it provides not only a full-capacity 200-amp ac arc welder, but also an ac power unit that will supply sufficient power to operate fifty 100-watt lamps (or their equivalent) regularly, or as an emergency standby power unit.

For further information write to the company, or use the Request Card at page 18. Circle No. 355.

Joint Fillers Have Jet-Fuel Resistance

■ A new rubbery joint-filler material reported to have increased solvent resistance to the destructive action of jet airplane fuels, gasolines, and oils is announced by Grems Mfg. Co., Klamath Falls, Oreg.

The new material is a modified polyloid thermoplastic elastomer made in a solid form for hot melting and pouring. It is also furnished in consistencies that are suitable for cold pouring into paving joints and voids in concrete, masonry, and structural surfaces.

The hot-melted filler sets quickly in cooling and flows smoothly and easily into any void to be filled. It forms a tough rubbery mass that elongates and retracts, adhering to all surfaces. The material is completely waterproof and is not affected by most acids, alkalies, salts, or other chemicals.

The materials are designated as Polyloid JFR hot-melt solids or Polyloid JFR cold-pour compound.

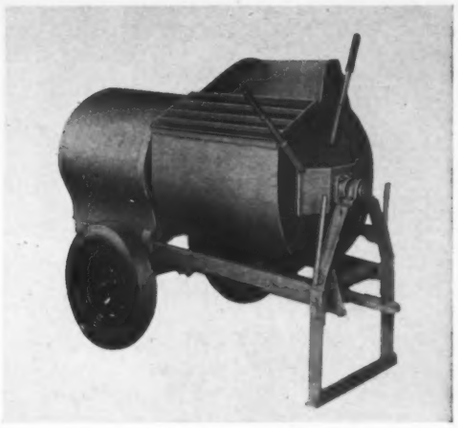
For further information write to the company, or use the Request Card at page 18. Circle No. 486.

New Plaster Mixers

■ Two new plaster and mortar mixers have been added to its line of contractors' machinery, according to The Knickerbocker Co., 620 Liberty St., Jackson, Mich.

The No. 9 Master-Mixer takes a full two-bag batch. Mixing shaft and bearings are protected by labyrinth packing glands. Drum and mixing shaft are carried by sealed cartridge-type self-aligning ball bearings. An adjustable axle extends to an over-all width of 46½ inches for stability on the road, but telescopes to 35½ inches for easy passage through 36-inch doors. Power is furnished by a 7-hp gasoline engine or a 3-hp electric motor.

The No. 4 Mix-Miser is a one-bag machine with a 29½-inch over-all width that allows easy passage through a 30-inch door. While smaller than the No. 9, it has the same design features.



The Knickerbocker No. 9 plastic and mortar mixer.

For further information write to the company, or use the Request Card at page 18. Circle No. 368.

IH ON THE SUPER HIGHWAYS

UNDER CONSTRUCTION
PROPOSED

Opening up the Ohio Turnpike

INTERNATIONAL TD-24 crawler tractors preferred by contractors on toughest phases of Ohio Turnpike construction

An estimated 29,506,100 cubic yards of earth and rock is being excavated and an estimated 46,905,000 cubic yards of borrow and fill will be moved before the great new 241.1 mile Ohio Turnpike is completed.

All along the Ohio Turnpike, from the eastern terminus in Mahoning County to the western terminus in Williams County, INTERNATIONAL TD-24 crawler tractors are taking over the toughest earthmoving jobs.

With 155 drawbar horsepower, the INTERNATIONAL TD-24 can conquer any big job. And the durability of every TD-24 means less maintenance, downtime, and operating expense, more profit for owners.

For full details or an on-the-job demonstration with the TD-24 or any of the other six great INTERNATIONAL crawlers and two rubber-tired tractors with scrapers or bottom dump wagon, call your International Industrial Distributor today.

INTERNATIONAL HARVESTER COMPANY
CHICAGO 1, ILLINOIS

HEAP LOADS IN A HURRY. One of Julian Construction Company's seven TD-24s push-loads a new INTERNATIONAL Model 75 PAYSCRAPER near Wauseon, Ohio. Julian has 1,000,000 cubic yards of dirt to move in sub-grading 7.2 miles of the Ohio Turnpike.

LOADING IN MAHONING COUNTY. Two of D. W. Winkleman's five TD-24s complete fast cycles in spite of soggy going south of Youngstown. Roughly three-and-a-quarter million cubic yards will be moved on this contract.

SPEEDS SOIL-STRIPPING FOR SMALLEY. Approximately 3,600,000 cubic yards of earth will be moved by D. R. Smalley and Sons, Celina, Ohio. One of their three TD-24s is used to pull a loader in the borrow pit near Milan, Ohio.

INTERNATIONAL HARVESTER

INTERNATIONAL®

FOR EVERY MOVE IN EARTHMOVING

Squeezing Ground Slows Work on Vehicular Tube

Tough tunneling job calls for use of heavy steel rib supports and a variety of excavating methods

Tunneling crews drive a 14 x 14-foot center drift through a stretch of stubborn rock. Five Joy rock drills are mounted in three levels on the jumbo which rides the rear of this truck. *C&E Staff Photo*

A 600-FOOT STRETCH of unpredictable ground under historical Missionary Ridge near Chattanooga, Tenn., provided a Kentucky contractor with some of the toughest tunneling conditions encountered in recent years. Sand, gravel, squeezing clay, and unstable limestone were all present. Codell Construction Co., Inc., Winchester, Ky., advanced at the rate of only 4 feet per 8-hour shift, and in the worst areas hardly 20 feet of progress was made in an entire month.

The 951-foot vehicular tunnel is being built for the Tennessee Department of Highways and Public Works to provide another tube for carrying U. S. 11 traffic through the mountain. The existing tunnel is in very poor condition, and will be rebuilt by Codell later.

Heavy Supports

The contractor ran into trouble almost from the start. Preliminary investigations had indicated that all would not be smooth sailing, but the conditions proved considerably worse than had been anticipated.

After several experiments, Codell settled on a heading-and-bench method of excavation, using steel liner plates, Commercial arch ribs, and needle-beam supports. A 6 x 6 top heading was first excavated with clay spades and braced with liner plates and steel ribs. Two 4-foot 9-inch ribs were connected at the top and were supported at the bottom by the earth.

About 12 feet behind, two crews removed the material in the corner areas on each side of the 6 x 6 heading. As this work progressed, liner plates were set in place and supported by 9-foot 3-inch ribs connected at the top to the 4-foot 9-inch ribs already in place.

Farther back, other crews cut deep slots along the sides of the bench and erected plates and 14-foot ribs. This provided a continuous 6-piece rib from wall plate to wall plate. Generally, the ribs were placed on 2-foot centers, but in particularly bad areas they were set practically next to each other on 1-foot centers. They were 8 inches deep and weighed between 35 or 40 pounds per foot.

Needle Beams

In most areas, however, the ribs were not self-supporting. The squeezing ground developed such large forces that the ribs were often bent out of line. To counter this, Codell followed closely behind the top heading with two 33-inch needle beams weighing 220 pounds per foot. This heavy bracing was used for about 80 feet. Spaced about 12 feet apart and 10 feet above the wall plates, the needle beams were moved ahead as the work progressed. Ten-inch built-up steel struts with screw jacks in each end were used at the wall plate to brace rings ahead of the concrete.

The forward ends of the needle beams were supported on foot blocks on the bench, and the remainder was supported on steel posts 5 feet apart. Braced with cross beams at the posts, the needle-beam frame provided an excellent support for the 10-inch beams that reinforced the ribs. The heavy needles were moved ahead by block and tackle hanging from the roof.

Because of the cumbersome network of supporting steel beams and posts, moving muck back from the heading was a big problem. Workmen clawed away at the material with hand tools and threw the chunks down steel chutes or onto small conveyors. A 100-foot conveyor with a 36-inch belt, set up along the invert, carried the muck beyond the working area where it was loaded into trucks.

As more and more material was taken out, 9-foot posts were erected below the wall plates and set on foot blocks. Finally, the invert was excavated, lined with plates, and braced with two 18-foot struts that connected at the bottom.

Concrete Lining

As soon as a suitable stretch of tunnel had been completely ribbed, a Mayo form for placing the concrete lining was pulled up on rails. Ordinarily, 20-foot lengths were cast at a time, but in bad areas, it was necessary to pour as soon as a 10-foot stretch was ready.

Ready-mix concrete with 4,000-pound strength was brought to the portal of the tunnel, where it was chuted onto a small conveyor that charged the hopper of an 8-inch Pumpcrete. After the sidewalks, curb, and invert section had been placed, tracks were set for the

GEORGE PENNISTON, SHAWNEE SCOUT OWNER SAYS:

"I like the Shawnee Scout because it enables me to get in and dig where no other shovel can go. I'm able to dig under an 8 ft. ceiling. I was so well pleased with my first Shawnee (it was an older model traded in on his present Scout) that I bought a second one."

SHAWNEE SCOUT DIGGER

- **Digs under 8 Ft. Ceiling**
- **Digs where larger shovels cannot go!**

Operators like George Penniston of Independence, Mo., like the Scout for its speed and ability to work in close quarters. With a 20-inch bucket, Mr. Penniston recently dug ditches 4 ft. wide and 5 ft. deep which shows the versatility of a Scout. His fuel consumption is about a gallon per hour. He is presently digging 200 ft. of sewer line on the project, possible due to the 12 ft. depth digging ability.

See Your Local Dealer or Write:

SHAWNEE MANUFACTURING CO., INC.

1947 -M N. Topeka Topeka, Kansas

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"After trying for several months to find some kind of oil to loosen some nuts on our Heat Treat Trolleys, we finally tried Kroil and found it worked excellently.

"Before trying Kroil we broke off every nut. Since then, we have not lost one and decreased the repairing time from thirty minutes to about six minutes per trolley."

KROIL is the amazing new chemical tool that comes to the rescue when production is threatened by some frozen nut, bolt, bushing or bearing. It creeps into millionth inch spaces, dissolves rust and dried grease and supplies lubrication to loosen the part. 12,800 industrial concerns are already depending upon Kroil in emergencies. If you are not one of them, accept this offer.

You too can get these results. Try KROIL on money-back basis. Gallon, $3.85; with Kroiler squirt gun, $4.95, f. o. b. factory.

Ask for GENIUS AT WORK—a free publication full of ideas for maintenance men.

KANO LABS. 1057 S. Thompson Lane Nashville 11, Tennessee

gantry traveler that mounted the form. Concrete was first piped through openings in the walls, and then up through a hole in the roof of the form at the near end. From here it was carried by pipe to the far end and spread. As the far end filled, the pipe was gradually drawn back through the hole in the roof. To make the closure with the previous lining, the Pumpcrete line was attached to a special fitting over the hole, which made it possible to seal the form after all the concrete had been placed.

Drilling

After the tunneling crews had pushed beyond the areas of soft ground, they ran into a 175-foot stretch of rock that extended almost to the west portal. Codell attacked the rock with a 14 x 14-foot center drift. Five Joy rock drills were mounted in three levels at the rear of a truck. About forty 4-foot-deep holes were drilled for each shot. Crews worked three shifts, averaging two shots per shift. Muck was removed with an Eimco and loaded into trucks. Fresh air was carried in through a Naylor 24-inch pipe.

The rest of the tunnel was drilled with ten drills mounted on a jumbo that rode on rails. Holes were drilled from 4 to 6 feet deep. Generally, each shot required about 160 holes.

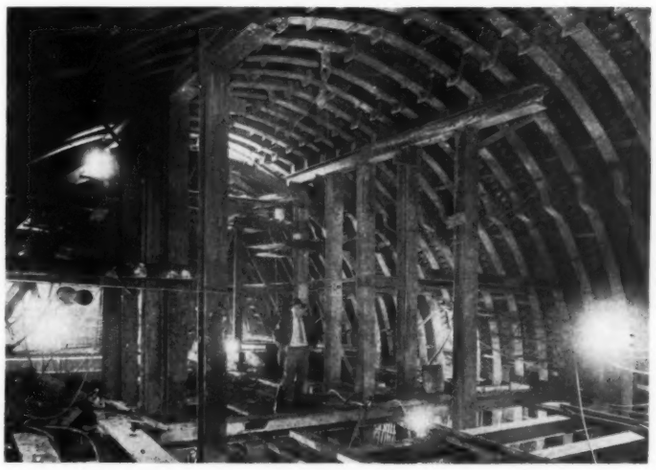
When the new tube is completed—probably some time this month—traffic will be admitted immediately and the old tube closed for reconstruction. This reconstruction job will consist mostly of erecting 8-inch ribs 2 feet apart in the center section and covering them with a 2½-foot-thick lining of concrete. Near the west portal, reinforcement consisting of 4-inch ribs 18 inches apart and a 7-inch covering of Gunite will be added.

Personnel

W. Ragland and Oscar Zigman were superintendents, and G. Lenhard was field engineer, for Codell Construction Co. The work was under the direction of the Tennessee Department of Highways and Public Works, which is headed by H. M. Bates, state highway engineer. S. M. Squires was division engineer, T. M. Burnett was construction engineer, and L. P. Hoge, resident engineer.

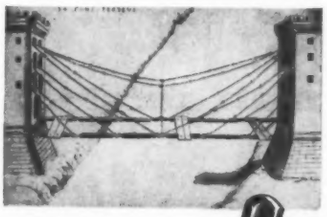
THE END

A view of the front end of a 33-inch needle beam which will be used to support the steel arch ribs against squeezing ground. In the upper background, workmen are cleaning up the bench. Muck is thrown down the steel chute at lower right.



Ten-inch beams and struts are used to brace the Commercial Shearing & Stamping steel arch ribs in areas where squeezing ground is particularly troublesome. Codell Construction Co., Inc., Winchester, Ky., has the contract for this 951-foot vehicular tunnel near Chattanooga, Tenn.

Verantius' Pons Ferreus
A SUSPENSION BRIDGE DESIGN
early seventeenth century



Engineering problems have been growing more and more complex in the past 300 years, and with them has grown the need for greater drafting precision. Since 1662, when the first Staedtler pencils were produced in Nurnberg, Germany, Staedtler has made constant improvements in pencil design and manufacture. Today, the Mars-Lumograph is America's finest imported drawing pencil; in the clutch pencil field the combination of the new 1001 Mars Technico push-button lead holder and 1904 Mars-Lumograph imported drawing leads insures your having the very best.

The 2886 Mars-Lumograph drawing pencil gives you precise thickness and the blackness of line needed for crisper, cleaner prints. Perfectly graded in 19 degrees; EXEXB to 9H. $1.50 per dozen—less in quantity.

The 1001 Technico Mars-Lumograph push-button lead holder costs no more than ordinary holders, has a noiseless, smooth-working, low-friction clutch mechanism, lightweight wood construction with perfect balance and, built into the push-button cap, a unique lead sharpener. $1.50 each—less in quantity.

1904 Mars-Lumograph Imported Drawing Leads are so opaque that inking-in is not necessary. Leads are ribbed for firm clutch grip and each has a removable cap which prevents sliding from holder. Available in 18 degrees; EXB to 9H. $1.20 per dozen—less in quantity.

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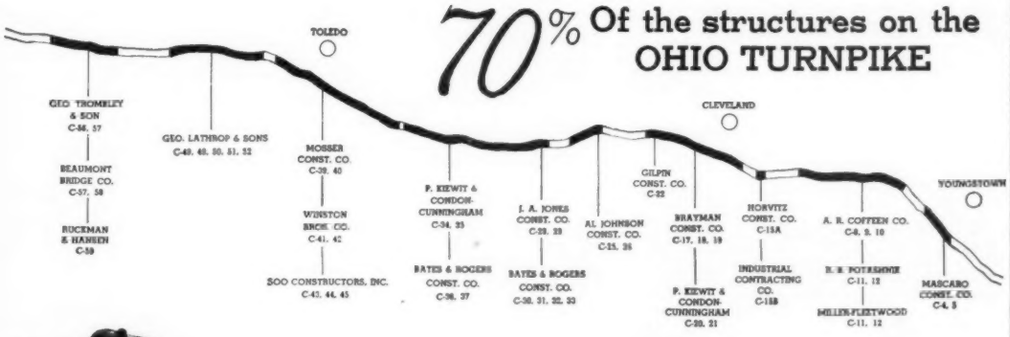
70% Of the structures on the OHIO TURNPIKE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CLEVELAND
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R. H. POTTERMORE C-11, 12
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On the structures for this major twin-lane super-highway, more MAGINNISS HI-LECTRIC VIBRATORS are in use than all other makes combined.

They are the choice of 19 different contractors; are saving labor and maintenance costs on 43 of the 62 sections. To learn the reason for their fast increasing popularity

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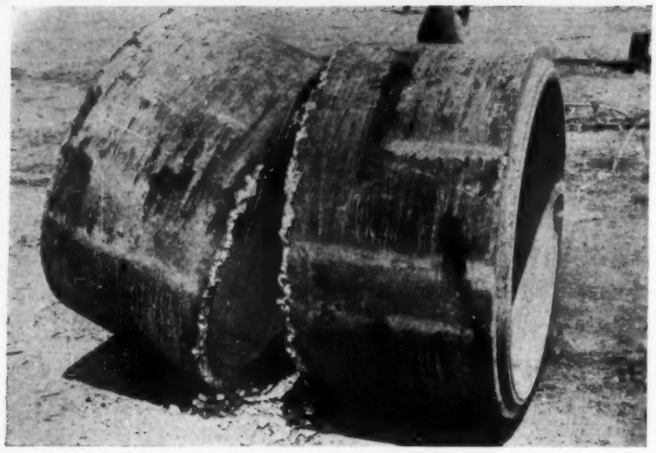


A clean break occurs in this 36-inch reinforced-concrete culvert pipe after the wrapping of primercord is detonated with blasting caps.

Test Labor-Saving Method For Cutting Concrete Pipe

A faster and cheaper method of cutting reinforced-concrete culvert pipe may soon be in use by contractors. Now under test, the method involves wrapping explosives around the pipe to produce a clean crack in the concrete.

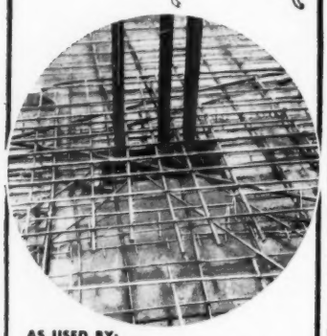
Cutting the concrete pipe in this way, it is estimated, will save a contractor about 75 to 80 per cent of labor costs involved in cutting pipe with an air hammer or a hammer and chisel—methods which require a cut of 4 inches in width and leave a considerably more jagged edge on the pipe.

The use of explosives to cut pipe is believed to have originated with J. A. Payton, a contracting firm operating out of Riverside, Calif., which adapted the procedure from cutting obstructing rocks with primercord.

While apparently faster and less expensive than usual techniques, cutting concrete pipe with explosives has obvious drawbacks, such as noise, concussion, and greater danger to workmen.

Experimental tests of the method are being made by United Concrete Pipe Corp. at its Baldwin Park, Calif., plant, with the assistance of the Atlas Powder Co. In the tests, Atlas 100-grain primercord is wrapped carefully around the pipe and detonated with blasting caps. The amount of fracture in each size of pipe differs, depending on the number of turns of primercord used and on whether the primercord is wrapped side by side or on top of previous turns. The blast travels through the primercord at a speed of about 18,000 feet per second. A clean crack can be obtained completely around the inside of the pipe, permitting the concrete to be chipped away and the reinforcing steel to be cut within a 1-inch area to leave relatively clean-cut edges.

Continuous high chairs and slab bolsters



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Owner: Carol Mgt. Corp., N. Y. C.
Contractor: Corbetta Construction Co., Inc.

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REINFORCED CONCRETE ACCESSORIES

Precision manufactured units to provide you with greater operating efficiency. Carefully designed and engineered to assure maintenance of the well-known high standards of Conver dependability.

- CONTINUOUS HIGH CHAIRS. Support continuously the top slab reinforcement and also the bent up bars around beams, girders and columns. Does away with temperature bars. Specifications, legs to be #5 wire up to 4", #4 over 4" to 6", #2 over 6" to 9", #0 height over 9" Top wire #2 from 2" to 6", #0 over 6" high.
- SLAB BOLSTER. #4 top wire, precision corrugated 1" on center, to assist the steel setter in placing bars. #7 wire legs, 5" on center for ¾ height. Over ¾" #5 legs. Stocked in 5'-0" lengths.

For additional information on our full line of building and concrete specialties, write for the free current, detailed CONVER Catalog. Just fill in and mail coupon below.

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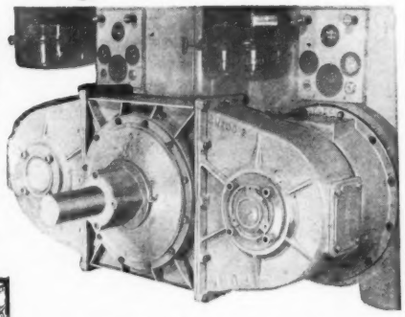
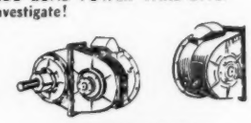
These standard interchangeable **combo-power** units will save you thousands of dollars.

When you repower your equipment eliminate large, costly, hard to service engines. Replace with smaller, low-cost engines compounded with FUNK POWER ACCUMULATORS. 2, 3 or 4 engines are combined with torque converters. Additional shafts or clutches may be provided at crankshaft centers, or equipped with right-angle drives or gear reductions in a variety of ratios. Other combinations include POWER DIVIDERS and EXTREME SIDE LOAD POWER TAKE-OFFS. Investigate!





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BLACKHAWK Trench-Hog

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A Ford or Ferguson tractor mounted, versatile, small trencher with big trencher performance, digs up to 800' per hour, with wide range of depths and widths—up to 7' deep, 20" wide. One man and a Trench Hog do the work of 40 hand laborers. Ideal for builders, plumbers, electrical contractors, utilities, municipalities and pipeline contractors.

- Depths accurately controlled, hydraulically.
- Cutters furnished in 6" to 20" widths. Easily changed to suit the job. Special cutters for tough soils and frozen ground.
- Optional equipment includes one side dirt delivery attachment to deposit spoil on either right or left side of trench.
- Crumbers available to provide clean, smooth, accurate trench bottom.
- Choice of 7 digging speeds.
- Independent wheel control for straighter line trenching and turning corners.
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PRODUCTS FOR BETTER FARMS, BETTER INDUSTRIES SINCE 1920

Simple Repair Link For Dragline Chains

■ A special link said to enable dragline operators to repair drag chains with greater speed and ease has been designed by Electric Steel Foundry Co., 2141 N. W. 25th Ave., Portland 10, Oreg. The new Spring-Lock repair link features a tightly compressed coil spring that grips the pin, replacing the elliptical collar formerly used.

Dimensional tolerances of this spring are such that, as the hinge pin is driven into it, the spring expands radially, well within the elastic limit of the spring material. When in service, the spring acts as a continual grip on the pin. In continued use the grip has a tendency to become stronger. The link can be installed in a matter of minutes with an ordinary hammer.

For further information write to the company, or use the Request Card at page 18. Circle No. 490.

Battery Charging Sets

■ A completely new line of Hobart motor generator sets for charging ignition batteries, and starting and lighting, is announced by the Motor Generator Corp., Hobart Square, Troy, Ohio.

Three different models of 125, 250, and 500-amp capacity are available. Each one is designed for charging both 6 and 12-volt batteries. New features include a one-hour timer.

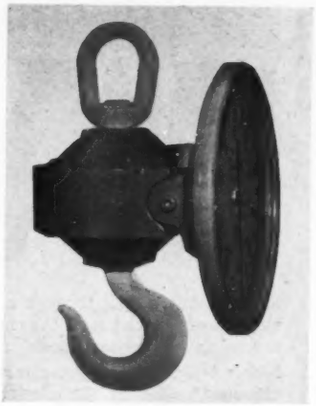
For further information write to the company, or use the Request Card at page 18. Circle No. 362.

Hook Scale Operates Without Friction

■ A new hydraulically-operated hook scale with accuracy reported to within ¼ of 1 per cent of capacity at any point on the dial is announced by Martin-Decker Corp., 3431 Cherry Ave., Long Beach 7, Calif. The Martin-Decker SU-20 Sensater features a mobile diaphragm that develops a piston-like stroke—but without a friction-causing piston rod or packing. The diaphragm does not deflect but moves with its backing plate, transmitting a constantly accurate signal to the gage. The hook scale is available in capacities of 5,000, 10,000, and 20,000 pounds.

According to the manufacturer, accuracy is unaffected by temperature and fluid changes. The 10,000-pound-capacity scale, requiring 17¼ inches of headroom, weighs only 73 pounds. The scale has a 25 per cent tare adjustment.

For further information write to the company, or use the Request Card at page 18. Circle No. 439.



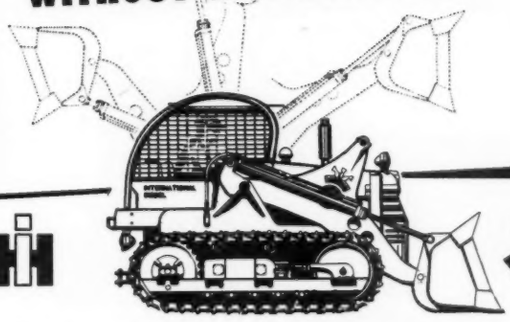
The friction-free Martin-Decker E-80 Sensater hook scale.

L. J. Clarke Heads Sales For Leschen Wire Rope

New general sales manager of the Leschen Wire Rope Division of H. K. Porter Co., Inc., New York, N. Y., is L. Jack Clarke. His headquarters will be at the division's main offices in St. Louis, Mo.

Mr. Clarke formerly served the Leschen organization as field representative in the New Orleans area, and as manager of the New York sales district.

Beat this—ONE LODOVER FILLS 35,000 TRUCKS A YEAR WITHOUT A BREAKDOWN



That's the remarkable score reported by a New Jersey road builder using just one LODOVER mounted on an International TD-9. When it wasn't loading from gravel pits, it was busy on road construction and widening. It cut drainage ditches, lay culvert pipe, cleared land and trimmed trees.

It's quite an achievement—close to 125 truckloads a day for one LODOVER, the greatest no-turn overhead and front-end loader ever built.

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FOR COMPLETE PROTECTION AGAINST . . .

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Wears like iron — takes endless rubbing, scraping, snagging, and still gives full protection.

100% Waterproof — made with top quality base fabric saturation-coated first and then coated with 6 coats of Neoprene Latex.

Positively will not blister, crack or peel. Its longer lasting quality means greater economy.

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Cambridge, Massachusetts

Simplifies Concrete Cutting
FELKER DI-MET
MODEL 200

MORE MANEUVERABILITY...
LESS WEIGHT...
POWER FOR BIG JOBS OR SMALL!

This NEW Felker DI-MET CONCRETE CUTTER meets *all* cutting requirements at LOW COST! Takes deep cuts and covers the footage of *big* machines, yet handles as easy as a baby buggy. Light weight means more maneuverability on close-ups, easier loading for fast transportation. Holds straight and true on long stretches. Uses economical 10" or 12" blade sizes. Cuts up to 3¾" deep with 12" blade. 13.5 h.p. Wisconsin engine provides ample power *even for 14" blades* and deeper cuts (by equipping with special blade guard). Hydraulic lift raises blade from cut, velvet-smooth hydraulic retardant eases blade into concrete—saves wear, increases blade life.

ADD ACCESSORIES AS YOU NEED THEM!

This new DI-MET Model 200 is available as a BASIC UNIT or may be purchased with additional accessories. POWER DRIVE and COOLANT PUMP ASSEMBLIES can be field installed. STARTER, GENERATOR and BATTERY must be ordered with the ENGINE. Choose what you *need*, buy what you *want!*

Many other exclusive features —ask for circular!

Made by the *only* manufacturer building both CONCRETE CUTTING MACHINES AND DIAMOND WHEELS . . . the winning combination that means *more* footage at *less* cost!

CELEBRATING OUR 30th ANNIVERSARY · SINCE 1924 · FELKER DI-MET

FELKER MANUFACTURING CO.
TORRANCE • CALIFORNIA
World's Largest Manufacturer of Diamond Abrasive Cut-off Wheels and Machines

Trailmobile Electronically Tests All Models

Trailmobile uses an electronic stress meter to pre-test designs. By "welding" gauges or thin, special wires to various spots on the trailer, the amount of stretching or compressing which occurs in the metal under load is accurately recorded. As the metal stretches or compresses, the wires in the strain gauge stretch or compress, which alters the flow of electrical current through wires.

This change in current is amplified through an electronic device and is then recorded on a photographic strip. In this way, the amount of strain on each part of the trailer can be accurately measured as the

loaded trailer is put through a series of tests which parallel the most severe operating conditions.

Before delivery, every trailer is road and load tested by this electronic stress method — especially on off-highway use — to be certain that the trailer is ready for every kind of construction job use.

39 States Now Have Safety Contests

State Safety Trophy—

Awarded to winning company in the mileage division who, in the judges' opinion, has done the best over-all job in the state. Trophy becomes property of the winner.

State Safety Award Plaque

. . . Presented to the company having the best safety record in its mileage division (one million miles a year or under; five million miles a year or under; over five million miles a year). Each plaque engraved with the winner's name.

The winning of a Trailmobile-sponsored Safety Award can mean much to your company. The program paves the way for lower insurance rates . . . assures better driver morale . . . means longer life for your equipment. And winners can use the awards in a practical way to open the door to solicitations and help improve their public relations.

Ask the Secretary of your State Trucking Association.

President Eisenhower Asks Fifty Billion For Highway Improvement

President Eisenhower, in a speech delivered by Vice President Richard Nixon to the recent Governors' Conference at Lake George, New York, has advocated that we spend five billion dollars each year for the next ten years in building new highway facilities, and improving our existing roads and streets.

The Governors heard the President's request to cooperate in planning a greatly stepped-up program of highway improvement which would cut down the loss of lives on the highway, the loss of time, money and resources caused by inadequate roads. They were reminded that we must meet the needs of a predicted population of 200 million Americans in 1970, that we must go all-out to protect the nation's security and promote the economy through better facilities for highway transportation.

Three Methods Suggested

The President suggested three ways to pay for these needed improvements . . . One, by additional toll roads and other toll facilities . . . Two, by increased gasoline and motor fuel taxes . . . and Three, through assistance from the Federal Government, extended by an RFC-type lending agency.

Good Roads Everyone's Concern

But it is up to all of us in the trucking industry to keep constantly behind the program for safe, modern, improved roads. It's high time we did something about obsolete roads. Our taxes are paying for new roads. Let's all join the call to bring our streets and highways up to date!

Here at Trailmobile we are ready with special construction equipment to help speed the job in this big road-building program. Trailmobile manufactures bulk commodities tanks, dumps, flatbeds, machinery platform trailers, steel open tops, dry freight vans — sturdy, dependable, cost-saving equipment to help you meet the bid and do the job fast, with less maintenance.

Complete information on trailers for construction jobs is available on request. Also available are all types and sizes of used trailers for use in such work. More information on these used trailers is given in the column at the right.

Figure the job with TRAIM

. . . and you'll mee[t] equipment bui[lt] with

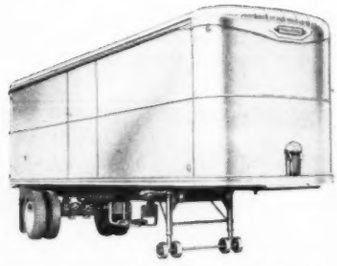
You'll See Trailmobiles On Job Sites Everywhere!

Bridge Construction . . . Road Building . . .
Power Plant Projects . . . Home Building . . .
Building Construction . . . . Dam Building

All-New Trailmobile Dump Trailer—Model TD-622 Tandem Axle. Here's a bulldog for toughness and endurance. 25-ton capacity, structural I-Beam strength, Hi-Tensile Steel Body combining light weight and tremendous strength, bolsters U-shaped and form a box when welded to the floor. Tailgate constructed to open top or bottom—a rear end that's built for plenty of rough treatment! 3-Stage Hoist mounted to push directly under the load. Also available in single-axle, 15-ton capacity. Power Fifth Wheel also available when you require pump and tank on trailer.

Planning a new construction job? Then don't get caught short with equipment that won't stand up under a beating! The rugged, simple construction of Trailmobile Trailers will take anything that your projects can dish out.

You'll slash maintenance with these heavy-duty huskies . . . speed loading and unloading . . . cut down-time . . . finish the job *faster* with Trailmobile's great maneuverability and flexibility. Over thruway



Trailmobile Smooth Steel Panel Van—Tough and sturdy as they come, this dry freight van can take all the punishment and abuse your construction jobs can hand out. Weather-tight, lightweight, it will handle all your bulk and miscellaneous equipment. Make it your warehouse on wheels or your mobile field office!

Trailmobile Machinery Trailer—When really back-breaking loads have to be hauled, Trailmobile heavy-duty machinery trailers are capable of handling the job. Models available with trunion axle assemblies, enclosed rocker beams, level or drop platforms, and with capacities up to 75 tons.

Trailmobile W-1 Platform Trailer—
Designed to take plenty of rough treatment and to give you years of efficient, economical hauling. Main frame rails are full 15" deep for extra load-carrying strength. "Cantilever" outriggers supported by cross-members every 18" for still greater load-carrying support. Also available as a 4-Wheeler Flat. Carries maximum loads of lumber, pipes, steel, sheet metal or what have you!

Trailmobiles Save Taxpayers $177 On Every Load Of Cement For Hydro Power Project

The Niagara Mohawk Power Corporation recently completed the first power station at South Colton, New York — the first in a big five-station hydro power project. Thousands and thousands of tons of cement have already been poured into this one dam. Many thousands more will be needed for the four additional projects coming up.

Checking the cost of handling cement, it was found that it runs as high as 37½ cents a bag to handle cement in bags. This is for the cost of the bag itself, filling, emptying and warehousing. With 472 bags in a load, this means an extra expense of $177 every load.

Lower Operating Costs

But now the cement is carried in **bulk,** in specially designed tank trailers developed by Trailmobile. In addition to the savings of $177 every load, there is more speed in handling. And the Trailmobile's light weight means lower operating costs, additional payloads.

Illustrated is the Trailmobile SC Bulk Cement Trailer, which unloads 118 barrels of dry cement in 15 minutes.

IMOBILE TRAILERS

ne bid with rugged, longer-lasting bui with the stamina and ability to take it!

or in mud and mire, Trailmobiles have the bulldog endurance and tenacity to get the job done!

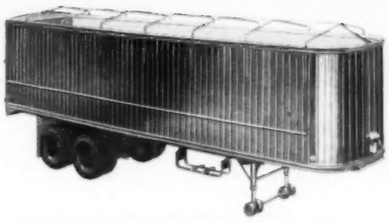
So, if profit problems are staring you in the face, team up with Trailmobile and meet your competition's bid. Without obligation—call one of the 65 conveniently located Trailmobile Sales and Service Centers for recommendations and assistance on your hauling problems. See the yellow pages of your phone book for nearest branch location. Or write us direct (see coupon). Remember, Trailmobile has the right trailer for every hauling need.

- **Exclusive Tandem Axle Suspensions with only 2 moving parts**
- **Exclusive Two-Speed Props**
- **Super Safety Brakes—either Vacuum or Air Power**
- **Wider, Longer Wearing Springs**
- **Stress, Strain and Shock Resistant Axles**
- **25% more Load-Carrying Strength**
- **Pre-testing of every part by Electronic Stress Analysis**

Trailmobile Platform Trailer Trains—Maximum payload combination with capacities up to 42,000 lbs. Lengths to any legal limit.

Trailmobile Bulk Cement Trailer—Bulk handling of cement eliminates bags, barrels, storage and rehandling. The specific savings in packaging is substantial. And you'll like the flexibility and speed that results from use of the Trailmobile SC.

Trailmobile Bulk Commodities Trailer—Any material that will flow—such as asphalt, core sand, aggregate and other bulk commodities with similar characteristics, can be handled with this model. Light-weight fibre-glass insulation is used for its high insulating qualities and to save weight.



Trailmobile Steel Open Top Trailer—Here's a corrugated steel open top Trailmobile that answers your problem of hauling bulky, concentrated loads. It can be crane-loaded. This rugged model has an extremely high strength-to-weight ratio and will quickly pay its way in durable performance.

TRAILMOBILE, INC.
Cincinnati 9, Ohio Dept. CE-10

Please rush specs and literature on following type trailers:

___BULK COMMODITIES ___VANS ___DUMPS
___OPEN TOPS___PLATFORMS___MACHINERY TRAILERS ___MOBILE OFFICE MODELS.

☐ We are interested in more information on _____type Used Trailers.

☐ Please have your Representative call without obligation.

NAME_____
COMPANY_____
ADDRESS_____
CITY_____STATE_____

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Subsidiary of Pullman Incorporated

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TRAILMOBILE

BIG VALUE

USED TRAILERS

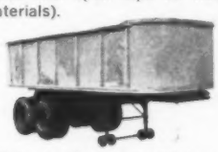
For Construction Work

All Sizes, Lengths and Types Available

TANKS for water, gasoline, oil, asphalt, bulk cement storage and transporting.

FLATS to hold and haul air compressors, pipes, lumber, poles, bulky machinery, digging equipment.

VANS for big cubic storage and office use (some insulated for cold-weather use, some with open tops for hauling bulk materials).

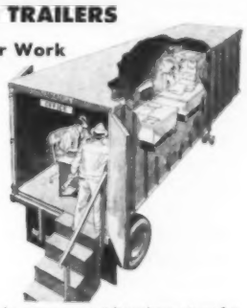


DUMPS for hauling up to 25 tons per load.

How Construction Companies Take Advantage of

TRAILMOBILE USED TRAILERS

in Their Work



- Portable, permanent headquarters for project offices, engineers' field offices, drafting rooms, payroll and watchmen's shacks.
- Tool and equipment sheds, parts warehouses.
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- Explosive protection, electrical or heavy equipment storage and moving, mobile supply houses, wet and dry ice storage.

Friendly Trailmobile Branch Offices throughout the U. S. will gladly help you—just mail coupon on the left.

By J. S. COWING, C.P.A.,
Main & Co., Philadelphia, Pa.

Tax Law Changes Give Contractors a Break

Liberal provisions cover depreciation of new equipment, accumulated earnings, and methods of financing expansion

ALL SIGNS INDICATE that new construction is needed as never before in industries like the generation of electric power. The liberalizing features of the new income tax law are just one more encouragement for the already optimistic construction industry. Now, when expansion is called for, new tax provisions help make that expansion profitable.

The Internal Revenue Code has been largely rewritten. Hundreds of changes have been made based on recommendations by the American Institute of Accountants, the American Bar Association, trade and business groups, labor, and, of course, by officials in the Treasury Department and committees of Congress and their staffs. These changes will greatly modify the operational decisions of many businesses.

While the tax structure as a whole is a complicated one, certain features of particular interest to the construction industry can be cited.

Depreciation Write-Off

Like other taxpayers, contractors now have the choice, under the revised code, of using certain accelerated methods of depreciation of new equipment.

Heretofore, contractors were generally required to charge off the cost of such depreciable capital assets as motorized scrapers in equal annual amounts over the estimated useful life of the equipment. Any probable salvage value was subtracted from the cost before it was divided into annual amounts. This was called the straight-line method. It meant that the recovery of cost through depreciation write-offs frequently involved a long period of time.

Under the declining-balance method, to take one example of the new methods, a more rapid recovery of cost is permitted. Contractors may now deduct depreciation at double the rate they would have been allowed to use under straight-line. If the life of a piece of equipment is estimated to be ten years, for example, the straight-line rate would be 10 per cent a year, while the declining-balance rate would be 20 per cent. However, this 20 per cent is applied to the undepreciated balance at the beginning of each year rather than to the original cost, as in the case of straight-line. The result is higher deductions in early years and lower deductions in the remaining years.

One disadvantage of declining-balance is that it is impossible to write an asset down to zero if there is no salvage value. So Congress removed the disadvantage by granting automatic permission to change from declining-balance to straight-line at any time during the life of an asset.

A comparison of deductions under the new method and under the old method for a motor grader with a cost of $20,000, an estimated life of five years, and no salvage value is shown in Table 1, which appears at the left of the following page.

It may be readily seen that the new method concentrates the bulk of deductions in the early years and makes it easier for expansion and modernization expenditures to justify themselves because of tax savings resulting from larger depreciation deductions in those early years. And by switching, then, to the straight-line method after the bulk of cost is written off, the taxpayer is able to recover his entire cost.

As the law limits the revised method to new property acquired after 1953, it cannot be applied to equipment on hand January 1, 1954, or to any used assets acquired after that time.

Osgood-General Model 322 Truck Crane Pouring Concrete With A ¾-yard Bucket For The Bridge Over Meander Lake

CONTRACTOR BEATS TIGHT PRODUCTION SCHEDULE WITH AN OSGOOD-GENERAL TRUCK CRANE

Roads Construction Corp., sub-contractor working on the Ohio Turnpike, has found day in and out dependability of their OSGOOD-GENERAL truck crane is a must to beat tight production schedules and to speed-up output.

The model 322 truck crane has been on the job every day since February building cofferdams, setting up heavy falsework for bridges, pouring concrete and moving rock and mud with a one-yard clamshell bucket.

Its use for these and other applications, together with its dependable performance and economical operation, is another example of the quality and engineering built in all OSGOOD-GENERAL machines.

We'd welcome an inquiry and the opportunity to give you complete information on the model 322 truck crane that can mean more profit for you.

CONSERVES MANPOWER • SPEEDS UP OUTPUT

Here's why according to Bill Kambouris, project manager, and Phil Granato, crane operator, for the Roads Construction Company.

RAPID TRANSIT. Holds traveling time between jobs to a minimum. Good over steep slopes.

PERFECT SPOTTING. Independent boom hoist has power up and down for spotting loads inch by inch. The torque convertor lets loads down smoothly.

QUICKLY CONVERTIBLE. Converts quickly to a clamshell, dragline, shovel or hoe.

OUTRIGGERS. Screw jacks on outriggers are great time and labor savers.

OSGOOD O-G GENERAL

MARION, OHIO

OVER 100 YEARS OF ENGINEERING PROGRESS

◄ Table 1

Year	New Method	Old Method
1	$8,000 (Declining-balance: 40% of undepreciated cost—$20,000)	$4,000 (Straight-line: 20% of $20,000)
2	4,800 (Declining-balance: 40% of undepreciated value—$12,000)	4,000 (Straight-line: 20% of $20,000)
3	2,880 (Declining-balance: 40% of undepreciated value—$7,200)	4,000 (Straight-line: 20% of $20,000)
4	2,160 (Straight-line: half of undepreciated value)	4,000 (Straight-line: 20% of $20,000)
5	2,160 (Straight-line: half of undepreciated value)	4,000 (Straight-line: 20% of $20,000)
Total	$20,000	$20,000

Table 2

Year	Declining-Balance Method		Straight-Line Method
	Undepreciated Value	40% Deduction	20% of cost less salvage
1	$20,000	$8,000.00	$3,200.00
2	12,000	4,800.00	3,200.00
3	7,200	2,880.00	3,200.00
4	4,320	1,728.00	3,200.00
5	2,592	1,036.80	3,200.00
		Total $18,444.80	$16,000.00

You May Deduct More

There is another interesting difference between straight-line and declining-balance depreciation. This difference was not evident in the example just cited because it was assumed that hard usage would leave the motor grader with no salvage value at the end of five years. But suppose in the light of usage it was thought the grader would have a value of about $4,000 at the end of its estimated useful life to the original purchaser.

Suppose this useful life was still five years. Under declining balance, the taxpayer is not required to subtract the salvage value in computing his depreciation. The comparable deductions under these conditions are shown in Table 2.

In other words, the contractor could deduct $2,444.80 more under the declining-balance method than under straight-line during this five-year period. This advantage is not altogether tax-free, however. If the motor grader is sold after five years for $4,000, as was estimated, there will be a taxable gain equal to this $2,444.80, since the undepreciated cost is only $1,555.20 under the declining-balance method. Under straight-line depreciation, there would be no gain since the undepreciated cost after five years would be $4,000, the same as the assumed selling price.

There are two things which soften the tax impact of this gain and bring the declining-balance method out ahead. In the first place, the gain—and the tax on it—does not come until the end of the motor grader's life. Meanwhile, each year's taxes have been lower, especially during the important first few years. Secondly, the tax on the gain will ordinarily be at capital gains rates, and the added tax will generally be much lower than that saved by deducting the extra depreciation.

Leasing vs. Owning

The attractiveness of the new accelerated depreciation rates will undoubtedly lead to a reappraisal of the leasing method by which some taxpayers have recently been acquiring the use of extra equipment. It still may be better to lease under certain conditions, but the policy of leasing rather than owning will have to be reviewed carefully and new guideposts established. What was cheaper under the old tax law may be more expensive now.

Before leaving the subject of depreciation, a word of warning must be given. When a change-over from declining-balance to straight-line is made, the change will have to apply to all the assets in a particular group of equipment. Care should be exercised, in establishing the group, not to have relatively new equipment recorded with equipment purchased earlier. In other words, the group might be made up of like items purchased within a given year. Although not necessarily the simplest, this may be the best method of record keeping in view of tax considerations.

Retaining Earnings

Frequently corporations, especially family owned or other closely held small corporations, have wished to hold back earnings in order to expand at a future date, or perhaps to modernize a plant or equipment. But under the old law, there was a risk in accumulating earnings. Corporations had to prove these funds were for reasonable needs. Since there was no definition of the term, they ran the risk of being accused of trying to reduce personal income taxes for the stockholders by not paying dividends. If they could not

Turnpike tests Transmissions

Contractor D. W. Winkleman is building two stretches of the Ohio Turnpike . . . working in rough, wet cuts, his ten Model C Tournapulls are doing a major share of the 7,300,000 cubic yard excavating job. On this operation the distance from cut to fill is over a mile and a half . . . the Tournapulls make the round trip of over 3 miles in just under 22 minutes. Fuller Model 5-A-1120 Heavy-Duty transmissions *are putting every "Horse" of the 186 hp diesels into the job.* In this contest of "scrape . . . load . . . haul . . . return" Fuller 5-A-1120 transmissions gear the Tournapulls with the *right ratio* for each load and grade condition.

The performance of Fuller geared equipment working in every major industry in *all types of on- and off-highway service* has been so outstanding that leading truck and equipment manufacturers *standardize on Fuller transmissions* in their vehicles.

From more than 110 different models available for rubber-tired equipment from 100 to 400 hp; engines from 330 to 1440 cubic inches . . . there is a transmission *designed with your job in mind.* Specify a Fuller transmission for your equipment.

where horsepower really goes to work

Fuller TRANSMISSIONS

FULLER MANUFACTURING COMPANY (Transmission Division), KALAMAZOO, MICHIGAN

Unit Drop Forge Division, Milwaukee 1, Wisc. • Shuler Axle Co., Louisville, Ky. (Subsidiary) • Western Dist. Branch (Sales & Service, All Products), 641 E. 10th St., Oakland 6, Cal.

prove the accumulation was reasonable, a penalty tax at high rates was levied.

Now this is materially changed. The penalty tax is retained, but in the future it will be necessary for the Internal Revenue Service to prove that funds have been accumulated beyond the firm's reasonable needs. This shift in the burden of proof is the crux of the matter. In previous years, when a similar condition prevailed, the government was almost never able to prove accumulations beyond the reasonable needs of the business.

Furthermore, any corporation will be permitted to accumulate up to $60,000 of earnings without being exposed to the penalty. And then, if there is an unreasonable accumulation, the penalty will apply only to that part which is excessive. Under the old law, if there was any unreasonable accumulation, the penalty tax applied to the entire amount of earnings retained in the particular year, whether or not some retention might have been reasonable.

Also, certain proprietorships and partnerships now have the option of being taxed as corporations—a choice many may make because of the lower corporate rates at certain levels. All these changes taken together suggest that under the new law more dealers, contractors, and engineering firms will find it easier to retain earnings and that more funds will be available from this source to finance expansion and modernization and to provide working capital.

Offsetting Losses

Sometimes expansion involving the purchase of power shovels, rock-crushing plants, or concrete pavers—to mention only a few items—may result in losses for the first year. Under the old law, the impact of such losses could be softened somewhat by a carry-back to the preceding tax year. This carry-back generally meant a refund of some or all of the taxes paid the year before. Any losses not used in this way could be carried forward for the five years following the loss year. These carry-forwards reduced taxes in later years, but they were of no help in bringing in immediate cash to assist in financing the needed expansion.

The new law allows losses to be carried back for two years instead of one, in addition to the five-year carry-forward. In many instances, this means that greater refunds of prior taxes will be available to help finance new developments.

In addition, Congress liberalized the manner of computing losses to be carried back or forward, so that the offsetting adjustments which frequently nullified a part of the tax benefit will no longer apply.

More Realistic Accounting

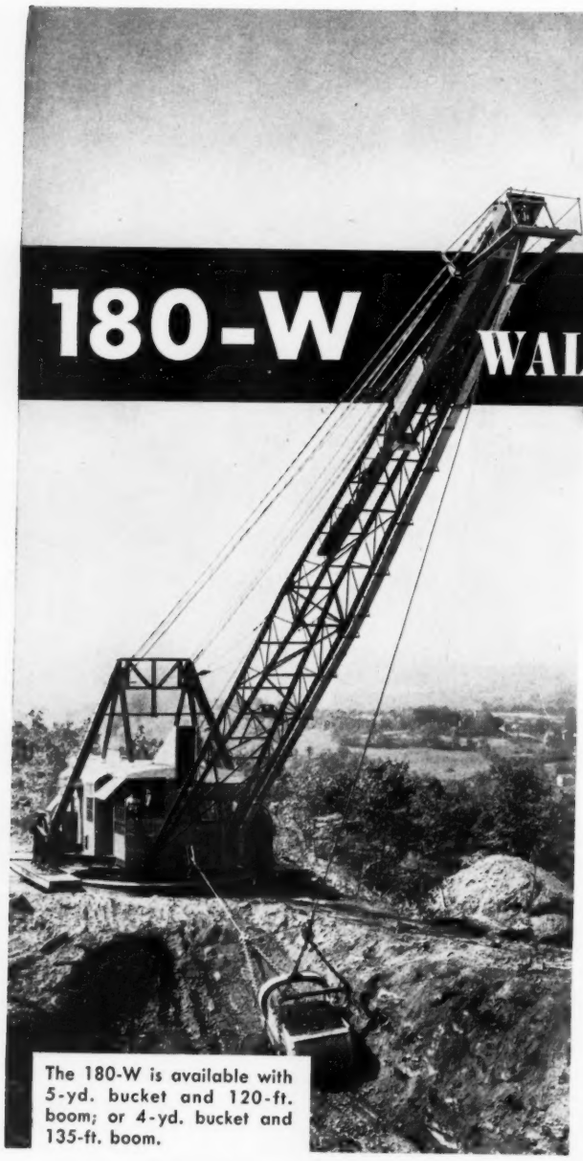
A very important change is one woven all the way through the new law—a change strongly advised by certified public accountants as well as by others. This change has to do with the basic problem of making the tax accounting rules correspond with generally accepted accounting principles. Take the matter of reporting income from the sale of a crawler tractor with several hydraulically controlled attachments for multiple use, a unit on which the distributor or manufacturer gives a guarantee for specified results for a certain period of time. Meeting the guarantee might result in considerable expense, but such possible expense under the old law could not be deducted in computing the profit on the sale. The expense could not be deducted until some performance was actually required under the guarantee, but meanwhile the dealer might have paid a tax on more than his actual profit on the sale. Now this injustice has been removed and the taxpayer will be allowed current deductions for any such future costs as long as they pertain to the current year's income, and as long as the contractor can estimate these future costs with reasonable accuracy, normally on the basis of past experience. The result is a more realistic determination of income for tax purposes.

Schedule of Payments

There are many other important revisions affecting corporate construction businesses. Declarations of estimated tax by certain corporations will be required, changing their schedule of tax payments. Each year for five years a larger proportion of tax will become due during the year in which it is earned. For the sake of simplicity, take the case of a firm which uses the calendar year—although it is actually better for many corporations to adopt a fiscal year other than the calendar year. This calendar-year corporation will pay 5 per cent of its 1955 tax in September, 1955, 5 per cent in December, 1955, and 45 per cent in March and again in June of 1956. Each year September and December payments will increase and March and June payments will decrease until there will be equal installments of 25 per cent in September and December of 1959 and again in March and June of 1960.

This new schedule of payments does not apply to corporations with less then $100,000 annual tax liability. They will continue to pay their tax 50 per cent in March and 50 per cent in June of the year after the income is earned.

The areas of improvement cited here are enough to show that the new law gives considerably more elbowroom to the construction and engineering industry. Detailed study of a specific business will be necessary to insure a complete and proper application of the new requirements to its tax problems. THE END



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Readily Assembled

180-W 5-cu. yd. WALKING DRAGLINE

Now you can put real high-capacity digging ability to work wherever your job takes you. The Bucyrus-Erie 180-W walking dragline offers unmatched ease of erecting and shipping for a machine of this type.

Only partial disassembly is necessary for moving from one job to another — the entire machine is easily loaded on five U. S. railroad cars. This not only saves time and expense in moving, but increases the machine's value throughout its entire life.

In addition to its exceptional portability, the 180-W offers dependability, big output, long working reach, maneuverability and low maintenance for which Bucyrus-Erie draglines have earned an outstanding reputation. Send for complete information. 14L54

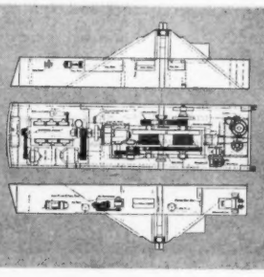
The 180-W is available with 5-yd. bucket and 120-ft. boom; or 4-yd. bucket and 135-ft. boom.

BUCYRUS ERIE

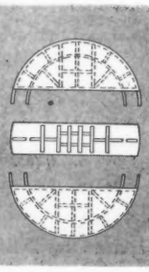
South Milwaukee, Wisconsin, U. S. A.

Entire Dragline Easily Loaded On Five U. S. Railroad Cars

Side wings unbolt from center section of revolving frame. Main machinery remains fully assembled and in proper alignment.



Base is in three separate welded-steel sections, joined by bolting flanges — easily disassembled and shipped.



The Wausau Model C material spreader.

Material Spreader Has Fewer Working Parts

■ A new material spreader in which there are no gears, motors, or complicated mechanical parts to break down and cause loss of working time, has been announced by Wausau Iron Works, Wausau, Wis.

The drive on the Model C quick action spreader is by friction through an adjustable spring-loaded spinner disk running against a pneumatic driving wheel. Speed of rotation of the spinner disk, which controls the width of spread, is set by adjusting the position of the wheel on the axle. The quantity of material reaching the spinner is controlled by an adjustable cone, located in the hopper, which may be set to increase or decrease material flow.

For further information write to the company, or use the Request Card at page 18. Circle No. 409.

Zinc-Base Surfacer Protects Against Rust

■ A surfacer that is applied like paint to protect equipment against rust is announced by Constad Laboratories, 214 W. 29th St., New York 1, N. Y. The manufacturer claims that Zinktron, a liquid zinc-compound coating, offers all the advantages of "hot dip" galvanizing. It takes only one hour to dry, and a gallon covers 450 square feet.

The product can be used over rusted surfaces when the loose scale is removed, as a galvanic action takes place through the rust. If the coating should be scratched, rust will not travel underneath. The coating may be used on any iron or steel surface. Of special interest to the user of construction and maintenance machinery is Zinktron's No. 2 formula which is specially compounded to resist abrasion.

For further information write to the company, or use the Request Card at page 18. Circle No. 441.

Portable Lighting Units

■ A varied line of portable spotlights and floodlights is covered in a bulletin from the Natale Machine & Tool Co., 339 State Highway 17, Carlstadt 3, N. J. The literature shows units that can be conveniently mounted on poles or walls, and a number of emergency lights equipped with handles.

The Circle-D light units illustrated include lights with mogul sockets in aluminum alloy housings in single and multiple mountings. Rim-mounted lights that use sealed-beam bulbs are also illustrated. The line also offers 200 to 1,000-watt lamps, and a wide variety of sockets, spare parts, and accessories.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 456.

New 145-Hp Engine For Light Trucks

■ A 145-hp Power-Dome V-8 truck engine for Dodge pickups, panels, and low-tonnage stakes has been announced by Dodge Division, Chrysler Corp., Detroit 31, Mich. The new engine is optional in Dodge ½-ton, ¾-ton, and 1-ton trucks for buyers who require more horsepower and torque than that provided by the 110-hp 6-cylinder engine. According to the company, it delivers more gross torque and as much as 39 per cent greater gross horsepower than other leading makes in the low-tonnage field.

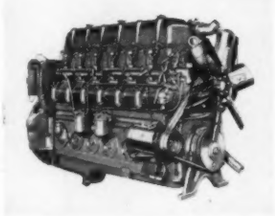
Piston displacement of the new engine is 241.4 cubic inches. Compression ratio is 7.5 to 1. A maximum gross torque of 215 pound-feet is developed at 2,400 rpm. The Power-Dome V-8 engine has a large bore of 3 7/16 inches and a short stroke of 3¼ inches.

For further information write to the company, or use the Request Card that is bound in at page 18. Circle No. 367.

Galion Appoints Shears

The Pacific Northwest district representative for The Galion Iron Works & Mfg. Co., Galion, Ohio, is Robert N. Shears. His territory includes Washington, Oregon, Idaho, Montana, Utah, and Wyoming.

Mr. Shears replaces Charles O. Evans, who has been transferred to the southeast coast territory as a district representative. The new Pacific Northwest representative will have headquarters in Portland, Oreg.



Horsepowers, 30 to 255. Two-cycle. 2, 3, 4, 6-cylinder models. Speeds to 1800 rpm. Stationary, mobile, marine. Diesel-generator sets

7 pounds, 6 oz.–rarin' to go!

How much weight to a horsepower? Take one of our P&H Diesels — divide its weight by its power — and that's the figure you get.

The reason we're so proud of our baby: at 7 pounds, 6 ounces this horse is full grown! No competing diesel can produce a full horsepower to that amount of weight. Pound for pound, this engine out-powers them all.

Dollar for dollar, too. A P&H will give you more horsepower per dollar than any other diesel. And just as a sort of extra, it's also the easiest to service!

Not that it will need much servicing. Actually, a P&H Diesel takes less of it than the old gasoline engine. Its fuel cost: *about one-third.*

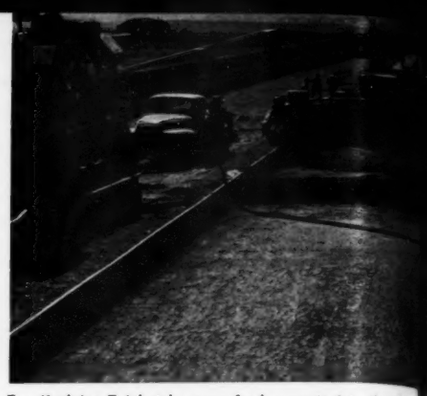
Some baby!

P&H Diesel Engine Division, Harnischfeger Corporation, Crystal Lake, Ill.

THE P&H DIESEL

lowest price per horsepower . . .
lowest weight per horsepower

A Caterpillar No. 12 grader pulls a Carr subgrader along the forms to strike off the base to exact grade. Excess material is removed by the Cat D6 with Traxcavator shovel. *U. S. Army Corps of Engineers Photos*



Two Koehring Twinbatch pavers feed concrete into the deep slab. The finishing equipment follows closely. The dowel

Thick Concrete Pa

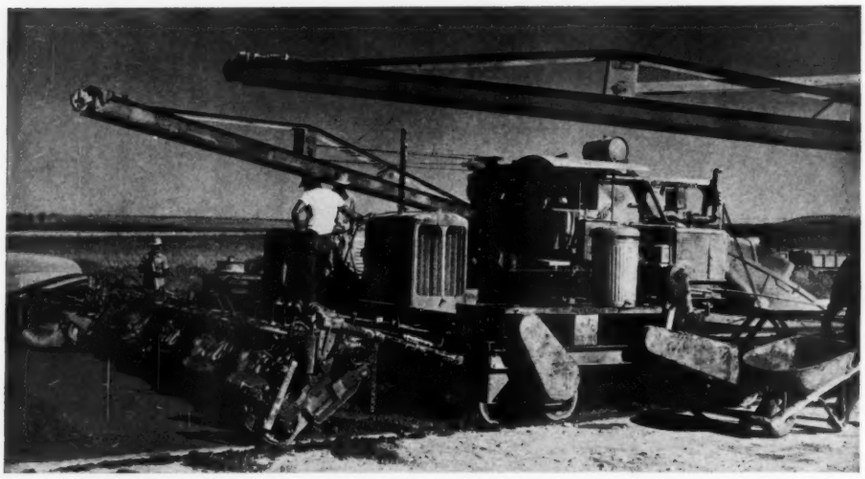
By RALPH MONSON, Field Editor

ALTHOUGH THEY SEEM to glide through the air and touch down on the runway with the grace of a bird, big bombers exert extremely great load pressure when they stand or taxi on airport aprons. To allow for these heavy loads, the U. S. Army Corps of Engineers is building runways, taxiways, and aprons of heavy concrete slabs over specially prepared subgrades.

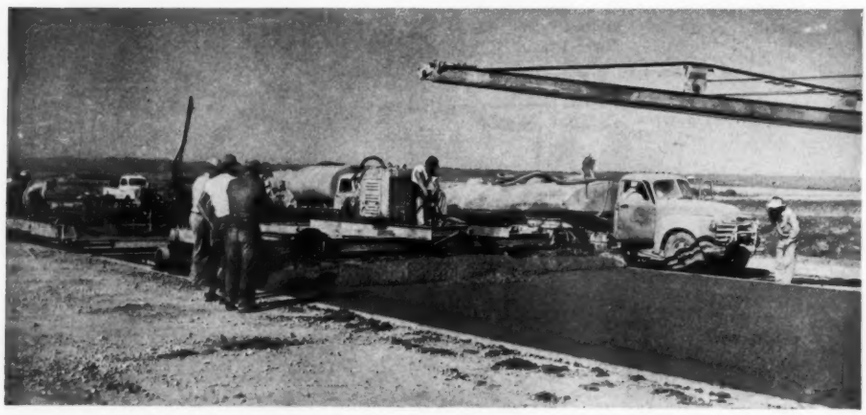
One such project involved the construction of 80,000 square yards of 21-inch concrete pavement and 45,000 square yards of 13-inch pavement in parking aprons at Ellsworth Air Force Base near Rapid City, S. Dak. Peter Kiewit Sons' Co. of Sheridan, Wyo., did the paving.

Paving of the aprons was only one of a large number of projects completed at Ellsworth Air Force Base during the last two years. Among other items were dormitories, mess halls, maintenance docks, storage buildings, hangars, asphalt overlay to strengthen existing runways, street paving, sewers, water mains, deep wells, six miles of railroad, underground fuel-storage facilities, and 30 miles of 7-foot Cyclone fencing. The total cost exceeded $20 million.

More than a dozen contractors

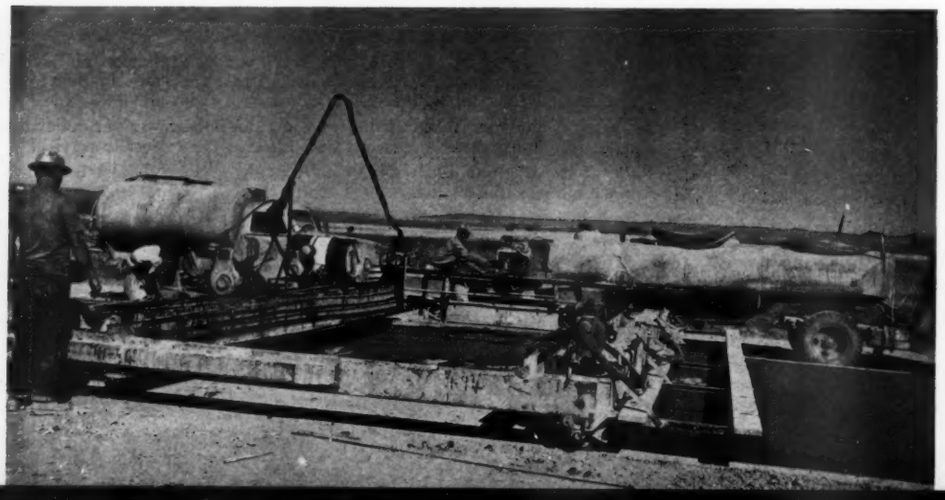


Here the pour is compacted by five Jackson electric vibrators powered by the generator mounted on the Jaeger spreader. Hydraulic controls raise and lower the vibrator assembly.

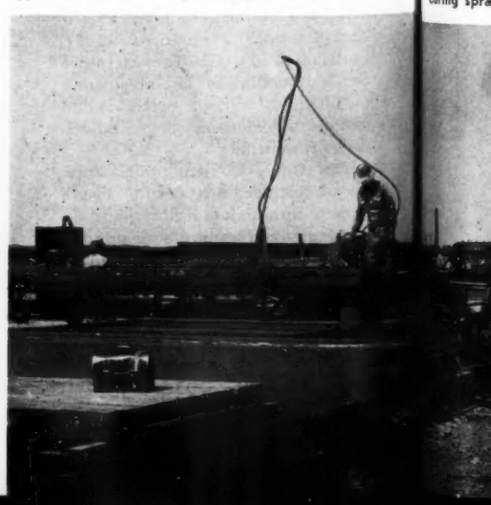


A Blaw-Knox finishing machine, closely following the spreader, leads the train of finishing equipment on the 25-foot-wide parking-apron strip at the base. The two tank trucks at the far side of the roadbed supply water to the pavers.

A Koehring longitudinal finisher follows to take out any remaining irregularities. Because the slab is deep, the mass of fresh concrete has a tendency to shift under the machines.



The Heltzel curing spray on this Flex-Plane belting machi applies a coat of Sealtight curing compound to the finish



expansion joint shows up clearly in the center foreground. Note the keyed side forms with tie bars at left.

Rubber tires ride the slab on the near side and steel wheels ride the slab on the far side as the Jaeger spreader follows the paver. At left, workers help themselves to water from a contractor-made sanitary container.

Pavement Laid on Airfield Aprons

More than 100,000 square yards of 13 and 21-inch pavement goes over compacted subgrade at air base

from Illinois, Minnesota, Nebraska, Montana, and Wyoming, as well as South Dakota, were engaged in these construction activities. Planning and supervision of the huge program was in the hands of the Omaha District of the Corps of Engineers. It is noteworthy that in spite of the large volume and the diversity of the work, there were on the average only about 30 men on the engineering and inspection staff at the base. Most of these were civilian engineers and inspectors working under the supervision of Lt. Col. P. D. Carlson, area engineer.

Grading and Base

While the topography of this airfield is relatively level, the grading of the aprons did require the excavation of 200,000 cubic yards of earth. Preparation of the 4-inch compacted base included the placing and compacting of more than 18,000 cubic yards of crushed gravel. Grading was done with scrapers pulled by crawler and rubber-tire tractors. The subgrade was compacted to 95 per cent density by rubber-tire rollers.

Crushed gravel for the base was hauled in by trucks, spread with motor graders, watered, and then compacted to 100 per cent density by pneumatic and steel-wheel rollers. Bros Wobble Wheel rollers with 13 pneumatic tires were pulled by Farmall tractors to accomplish the initial compaction of the base. After being shaped to exact grade by Caterpillar No. 12 graders, the surface was rolled by Buffalo-Springfield three-wheel and three-wheel-tandem rollers.

Because the paving section varied from 13 to 21 inches in thickness, grading and forming presented unusual difficulties. For the shallower section, a single 13-inch Heltzel paving form was set on the compacted base. Where the thickness increased to 21 inches, an 8-inch form was used under the 13-inch form. The tapered section between was formed by using the continuous 13-inch form across the top with wedge-shaped wood sections filling in beneath. A Le Roi hammer, supplied with air from a Le Roi Tractair, was used to drive the form stakes.

Use Two Pavers

Two Koehring 34-E dual-drum pavers operated on opposite sides of the strip, depositing the concrete on the base ahead of a Jaeger spreader. Compacting the deep mass of concrete presented a problem, which Kiewit solved by using a Jackson paving tube and five Jackson electric-powered vibrators attached to the rear of the spreader. A 10-kw Jackson generator mounted on top of the spreader supplied electric power for the vibrators.

A Blaw-Knox finisher and a Koehring longitudinal float followed the spreader. The deep mass of air-entrained concrete also provided some finishing difficulties. When the surface was setting up ready for finishing, the body of the slab still retained a jelly-like consistency. On the 1½ per cent slopes across the strips, the concrete had a tendency to sag toward the lower side during the finishing operations. The quick drying conditions provided by bright sunny days and hot dry winds during the late summer added to the problem.

The 25-foot-wide strips were paved without longitudinal center joints. In the early phases of the work, transverse joints were cut 5¼ inches deep in the freshly laid concrete with the aid of a Flex-Plane jointing machine. Later some of the joints were sawed. The final finish was achieved by a Flex-Plane belting machine. The Heltzel curing spray attached to the same machine applied a protective membrane of Sealtight clear concrete-curing compound.

Alternate strips of the apron were paved first, with the pavers operating from the grade outside the forms. Then the sections between were filled, with the pavers working from the slabs which had already been poured, and the finishing equipment also riding on these slabs. No forms were required for these latter pours. A Lorain TL-50 Moto-Crane moved the paving equipment from one lane to the next.

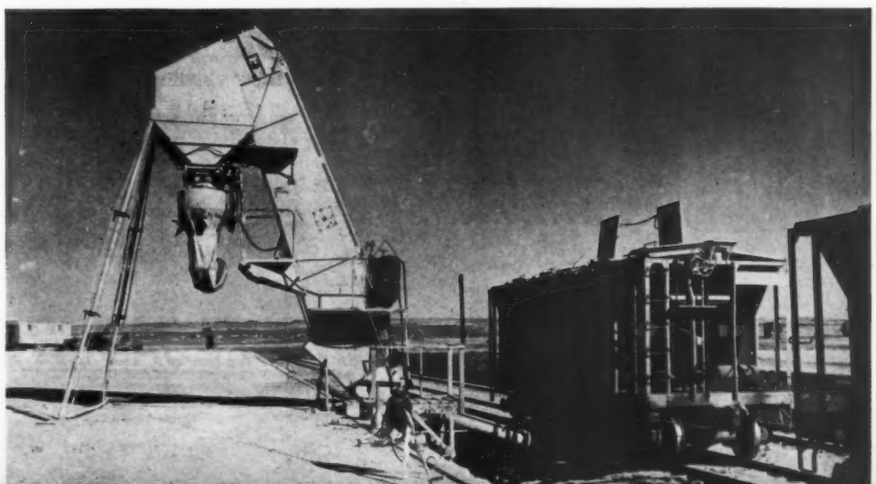
Batching Plant

Aggregate was batched from a Heltzel two-compartment bin. A Northwest crane with 2-yard clamshell bucket charged the hoppers, while a Caterpillar D8 tractor with dozer helped maintain the stockpiles. A Johnson bulk cement plant weighed out twin batch charges into the 2-batch trucks which hauled to the pavers.

The mix, designed for a 28-day beam strength of 550 psi, consisted of

slab. This machine gives the surface a final belting just ahead of the curing spray. Peter Kiewit Sons' Co., Sheridan, Wyo., handled the job.

Bulk cement is unloaded from railroad cars and loaded into trucks at this Johnson cement plant. From an under-track hopper the cement is carried by screw conveyor and bucket elevator to the overhead hopper.



crushed-limestone coarse aggregate graded from 1½-inch size down, river sand, cement, and water. A typical 37.4-cubic-foot batch contained the following weights of materials:

Cement	716 lbs.
Sand	1,726 lbs.
Crushed rock	2,550 lbs.
Water	361 lbs.
Protex	12 oz.

The water-cement ratio was maintained at 5.69 and air content between 4 and 5 per cent.

In an average 10-hour day, Kiewit's crew laid about 1,000 linear feet of pavement 25 feet wide and 21 inches deep. In volume, this represents nearly three-fourths of a mile of normal highway paving.

Personnel

The operation at Ellsworth AFB was under the direction of the Sheridan district of Peter Kiewit Sons' Co., with Homer Scott as district manager, and George Nugent, assistant district manager. Bill Wilson was general superintendent, and Clark Tope was in charge of paving.

The area engineer, Lt. Col. P. D. Carlson, was in charge of all construction at the base at the time of the paving operation. He was assisted by Pat Draper, assistant construction engineer. Warren Withee was resident engineer in charge of the paving project. THE END

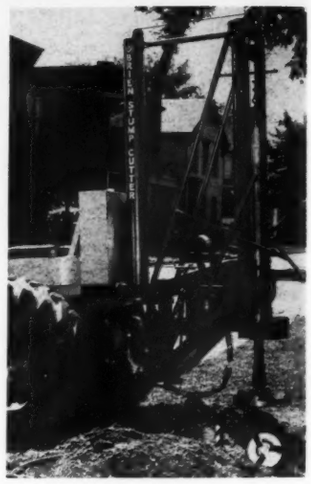
Line-of-Sight Radio

■ New line-of-sight and point-to-point radio equipment housed in a compact metal cabinet is announced by the Engineering Products Division, Radio Corporation of America, Camden, N. J.

Housed within the cabinet is RCA 960-megacycle microwave equipment, including a receiver, a transmitter, and exciter. The transmitter has a power output of 2 watts and an output impedance of 52 ohms. Both the transmitter and receiver have an operating frequency range of 890 to 960 megacycles. The baseband channel extends up to 30 kilocycles and may be subdivided into a number of voice or signaling circuits.

Where more than one channel is required, multiple equipment which will provide two voice channels with signaling can be installed inside the cabinet. Additional voice or telegraph multiplex units, installed in a similar housing, can also be connected to the radio equipment.

For further information write to the company, or use the Request Card at page 18. Circle No. 471.



The O'Brien stump cutter, shown with three cutting tools, is used to cut away stumps below ground level.

Cutter Reduces Stumps To Pile of Shavings

■ Any stump can be reduced to a pile of shavings in short order by the use of a tractor equipped with an O'Brien stump cutter. Operating from a rear power takeoff, the cutter drills out a stump to any desired cutting depth, using a pilot drill first and then successively larger cutters. Cutting tools furnished with the equipment consist of the pilot drill and 8½ and 15-inch cutters, together with 10 sets of cutter blades.

The machine itself is made up of a frame with suitable bearings and a spindle. It is ordinarily mounted on a four-wheel drive, rubber-tire tractor, although it can be mounted on certain International Harvester tractors and on the D-2 Caterpillar tractor. The manufacturer will determine the suitability of any tractor for mounting the cutter if rear specifications are submitted by the customer. When the O'Brien stump cutter is shipped, the manufacturer furnishes a mechanic to assemble the machine and demonstrate its operation.

Because this machine cuts out the stump completely, it eliminates hauling the stumps away and storing them for future disposal. Blasting, burning, and digging become unnecessary. The cutter can cut away a stump with no damage to the road, sidewalk, or curb, and without interfering with traffic.

For further information write to Metal Parts Machining Corp., Broadway and 25th St., Watervliet, N. Y., or use the Request Card at page 18. Circle No. 496.

Line of Trucks Offered With Right-Hand Drive

■ The availability of right-hand-drive International light, medium, and heavy-duty trucks for domestic users is announced by the International Harvester Co., 180 N. Michigan Ave., Chicago 1, Ill.

This drive is an advantage in a number of construction operations as well as highway-maintenance work. The right-hand drive is available for International trucks with conventional cab design.

For further information write to the company, or use the Request Card that is bound in at page 18. Circle No. 501.

In winter, one-way trip, one-way rigid, reversible trip, and Vee-type Wausau plows can be interchanged quickly with buckets on SHOVELOADER. Plows follow ground contours, through loader's hydraulic float action, getting them right down to the surface. Big 2½ cubic yard coal and snow buckets are available.

Spring, summer, and fall SHOVELOADERS do hundreds of jobs in addition to loading trucks. They are ideal for stripping jobs like this. The full width bucket lets the wheels follow wherever the bucket digs. Operator has full visibility and is located away from moving control arms.

Weight of the SHOVELOADER distributed over a 100-inch wheelbase and 74-inch wheel tread lets it work in soft sugar sand. Low center of gravity and rear wheel oscillation contribute to traction and stability. Four wheel, 3 to 1 planetary reduction drive with big, hi-flotation tires sees it through tough spots like this one.

SHOVELOADER'S long, forward reach (minimum is 3 feet at top of lift fully dumped) spots loads in the center of any hauling equipment used. Its "triple action" bucket lets you pick up heaping loads at every bite. Planetary drive doesn't let drive wheels slip: you get full traction all the time.

4-WHEEL DRIVE SHOVELOADER

master of tough jobs!

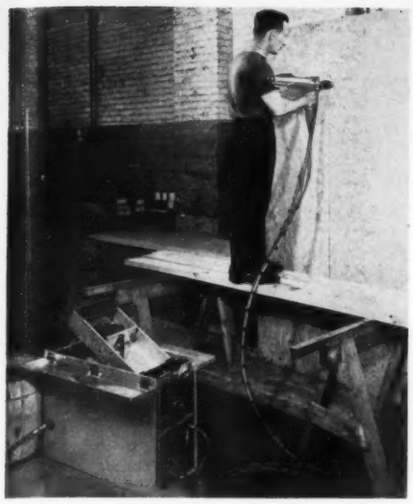
Actual case histories prove that the powerful 4-Wheel Drive SHOVELOADER can out-perform other equipment on almost any job... two choices of power, diesel or gas; three choices of steering ... front wheel, rear wheel, or four wheel steer. Ground gripping, four wheel drive traction gives it the power to do all jobs shown. Triple action bucket cycle makes it fast and efficient. Three to one planetary drive axle ends reduce torque on drive line 300 per cent, making it more durable, dependable, and smoother operating. Moving bucket arms are remote from the operator for greater safety and full 360° visibility.

Get your copy of Bulletin AD 55

We'll send you the eight-page, illustrated brochure immediately upon request. It gives full details and specifications. Just contact our distributor or write The Baker-Lull Corporation, 370 West 90th Street, Minneapolis 20, Minnesota.

Baker Lull
handling equipment

SHOVELOADER
THE NEW LEADER IN LOADERS



The Morgan portable nail driver is shown nailing up plywood siding.

Pneumatic Nail Driver

■ A new portable nail driver with an automatic hopper feed sinks a nail completely with a single stroke of its pneumatic driver. Using this tool, an operator can drive 40 to 50 nails per minute for sustained periods, according to the manufacturer, the Morgan Machine Co., Inc., 1256 University Ave., Rochester 10, N. Y. The Morgan portable nail driver operates by compressed air, requiring 14.7 cfm at 80 to 90 psi.

The tool consists of a feeding unit weighing 65 pounds, a driving unit weighing 8½ pounds, and a length of plastic hose which connects the two. The feeding unit is connected by a standard air hose to the compressed-air supply. Nails used in the unit may range from 4 to 8d in size.

For further information write to the company, or use the Request Card at page 18. Circle No. 502.

Simple Water Level

■ A simple water level that comes with its own reservoir is made by Hydrolevel, 53 DeSoto, Ocean Springs, Miss. The new Leveleasy also includes a tube reel and a 50-foot clear plastic tube in an aluminum container. The tube permits extending a level line for 100 feet.

The level has no delicate parts to get out of order and can be kept close to the job without fear of damage. It offers a speedy method of setting batters and grade stakes and leveling concrete floors. It is used for masonry work as well as form erection or for setting screeds. The Leveleasy is practical as a secondary level on multiple jobs or for the small builder who needs such a hydrostatic level only occasionally.

For further information write to the company, or use the Request Card at page 18. Circle No. 366.

Line of Small Boilers

■ A new bulletin describing its recently announced CB50-80 line of small boilers has been issued by the Cleaver-Brooks Co., 326 E. Keefe Ave., Milwaukee 12, Wis. Available in 50 to 80-hp capacities, the boilers are rated at 15 to 150 pounds of steam, and 30 pounds of hot water. Silent operation, fuel flexibility, easy maintenance, and automatic safe operation are features listed.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 419.

Small Steam Cleaner

■ Rapid cleaning of motors, compressors, engines, and machinery without dismantling can be done with the Steam Kleen jet sprayer, a 16-pound device being introduced by the Henry Flow Control Co., Melrose Park, Ill. In the Mighty Midget Model No. 111 cleaner, steam jet feed is operated by fingertip control. Changeover from wet to dry steam is instantaneous, and is accomplished by tilting the unit from a horizontal to a vertical position. The sprayer degreases as it cleans.

The unit is electrically heated, thermostatically controlled, and operates on any 110 and 115-volt circuit. It holds half a gallon of water, and can be brought up to operating temperature and pressure in 20 minutes by using cold water.

The Henry Steam Kleen jet sprayer.

For further information write to the company, or use the Request Card that is bound in at page 18. Circle No. 484.

Gas-Turbine-Powered Pump on Test at Navy Fire Fighting School

Where Hyatts turn at 40,000 rpm!

Old in theory, gas turbines are comparatively new as a practical power source. So it was big news in engine development when Solar Aircraft Company, of California, announced the world's first portable, hand-started gas turbine power plant.

Developing 50 horsepower, the new lightweight operates at the high speed of 40,000 rpm—or twenty times the speed of most automobile engines! And that's where *we* come in.

To be sure of complete bearing dependability for such high-speed operation, Solar turned to Hyatt . . . and there's a Hyatt Hy-Load Roller Bearing at the most critical position on the turbine shaft.

Whether you're building locomotives or lawn mowers, and whether shafts turn at 4 or 40,000 rpm, you'll get better bearing performance from *Hyatts!*

HYATT

ROLLER BEARINGS

STRAIGHT ◯ BARREL ◯ TAPER ◯

HYATT BEARINGS DIVISION • GENERAL MOTORS CORPORATION • HARRISON, NEW JERSEY

Transit Eyepiece With Variable Power

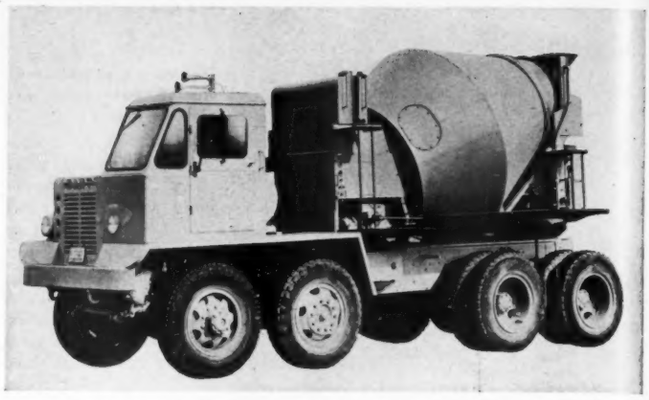
■ Variable power, which eliminates the need for more than one eyepiece for changes in magnification, is now standard on all transits made by W. & L. E. Gurley, 518 Fulton St., Troy, N. Y. This feature permits the man in the field to change his magnification to suit the day. The single eyepiece makes possible a change from high to low magnification and back again with stops anywhere in between. It provides a clear flat field, devoid of aberrations, at any magnification selected.

The manufacturer points out that it is not necessary to re-focus on the objective when using the eyepiece, which provides all the power required for the longest sight as well as reduced power to suit local conditions. Visibility under poor lighting can be improved by use of lower magnification. The turbulent effect of heat waves rising through the line of sight is also minimized by the lower power.

For further information write to the company, or use the Request Card at page 18. Circle No. 350.

American Hoist Appoints Dervey as Sales Manager

Recently appointed as general sales manager of American Hoist & Derrick Co., St. Paul, Minn., was Ray J. Dervey. Mr. Dervey began working for the company's industrial equipment division in the St. Paul sales office in 1945. He was promoted to district manager a year later, taking charge of the Pittsburgh office and territory.



The new Dart Model 15-DT chassis for transit mixers carries a 45,000-pound payload under legal highway limits.

Chassis Designed for Transit Mixers Increases Capacity Within Legal Limits

■ A new double-tandem-type chassis designed for increased transit-mixer haulage capacities has been placed on the market by the Dart Truck Co., 27th and Oak Sts., Kansas City 8, Mo. The new truck, Model 15-DT, was designed for 54,000 to 60,000 pounds gvw with front-tandem-axle loading of 24,000 to 30,000 pounds. The rear-tandem loading is 28,000 to 32,000 pounds, depending upon the type of mixer and its location on the truck chassis.

The unit weighs 15,000 pounds and is capable of carrying a 45,000-pound payload. While the truck was designed especially for transit-mixer work, it can be used for flat-bed mounting to haul other types of heavy materials. Powered by a 178-hp or 200-hp engine, the truck has a 5-speed main transmission and an auxiliary.

A feature of the truck is its front tandem axle which is designed with rocker-type spring suspension and self-floating axles. Twin hydraulic cylinders provide fingertip steering. Top speed is well above legal roadway limits, and the truck's maneuverability makes it particularly suitable for off-highway travel. The new truck is available with optional front-axle drive, making it a 6 x 8 driving unit, which is desirable for heavy off-highway work.

The new Dart 15-DT has a one-man cab, and its design provides easy accessibility to the engine and all cab accessories. The frame, box-girder type, withstands heavy-duty hauling despite adverse road conditions. Air or hydraulic brakes are offered. Optional tire sizes are 10:00 x 20 or 11:00 x 20, depending upon required load capacities.

Other recent Dart developments include a number of very large dump trucks, the biggest of which is the 60-ton Model 600. This torque-converter-equipped unit is powered by two diesel engines totaling 700 hp.

For further information write to the company, or use the Request Card that is bound in at page 18. Circle No. 370.

VERTICAL PRESTRESSING OF CONCRETE walls for a concrete water tank is done with a Re-Mo-Trol hydraulic jack. Six wires, which are secured in the bottom of the wall, are prestressed at one time.

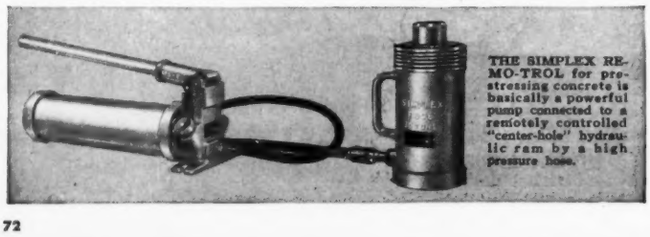
Remote-Controlled Hydraulic Puller Perfected for Prestressing Concrete

Construction Men Cite Simplex Unit for Fast, Easy Use

Tensioning cable, wires or rods for concrete prestressing is being done easily and quickly with Simplex hydraulic "center-hole" pullers, a number of construction men report. Because the unit is actually made up of two parts, a remotely controlled ram and a pump, the puller is more easily handled than conventional hydraulic jacks, they explain. The pump unit can be located nearby where it is most convenient for the operator. Many users install a pressure gauge, available as an accessory, between the pump and the puller to check the amount of prestressing applied. This Simplex Re-Mo-Trol puller is also useful on construction jobs as a powerful jack for lifting equipment and building sections, for aligning heavy beams, etc., and for testing the load bearing ability of the soil. Available in 7 models with capacities from 10 to 100 tons, it works in tight spots and enables workmen to stay at a safe distance while lifting, pulling or pushing.

Made by the world's largest manufacturer of industrial jacks, the Re-Mo-Trol is only one of many Simplex jacks that are useful in the construction industry. Others include the famous Jenny self-contained "center-hole" puller, the No. 310A Emergency Jack which lifts 15 tons on the cap, on the toe, on a cap shoe or at intermediate heights with a chain sling, and standard hydraulic, screw and ratchet lowering jacks. They are all described in General Catalog No. 53. Write for a free copy.

TEMPLETON, KENLY & CO.
2511 Gardner Road • Broadview, Illinois



THE SIMPLEX RE-MO-TROL for prestressing concrete is basically a powerful pump connected to a remotely controlled "center-hole" hydraulic ram by a high pressure hose.

Announcing

The unit is light in weight, compact, very portable, easy and economical to operate and maintain.

WASHINGTON
Dens-o-meter

The KEY to *accurate* field tests for moisture-density of embankment and foundation soils

Developed after two years research and experiment by Department of Highways, State of Washington. Opens up entirely new possibilities for earthwork engineers and contractors. Engineers can now make accurate moisture-density and compaction tests

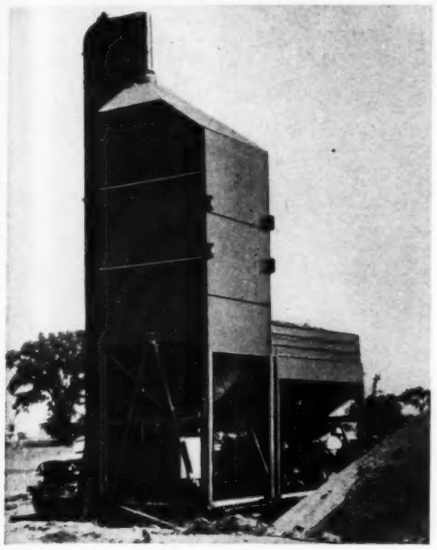
- **in all large or small holes**
- **in all types soils and granular base materials**
- **in about 3 minutes after hole is dug**

Now for the first time, holes of any size from 0.000 cu. ft. to 0.500 cu. ft. can be measured with the same equipment. Holes up to 22 inches in depth can be measured—singly or in successive lifts.

Get full information from
Exclusive Sales Agents

CHARLES R. WATTS & CO.
4121 SIXTH AVENUE NORTHWEST
SEATTLE 7, WASHINGTON

New Bulk Cement Bins Designed to Attach To Trolley Track of Aggregate Bins



New bulk cement bins that hook onto the trolley track of the CMC Bin Batchers are now offered, along with other components, to make complete batching setups. The bucket elevator shown is a standard heavy-duty unit that will unload a 150-barrel cement truck in about 35 minutes.

■ New bulk cement bins for trolley operation are now available from Construction Machinery Sales Co., 447 Vinton St., Waterloo, Iowa. These bins, although offered separately, were designed to fit the company's Bin Batcher aggregate bins, which feature a built-in trolley track that allows a traveling weigher-hopper to operate from either end of the bin unit. The new cement bins hook to this same trolley track. They are available in 25, 150, 200, and 300-bbl. capacities, and all of them are 8 x 8 feet in size.

A separate cement compartment can be built into the aggregate weigher and the regular scale furnished with a cement-sensitive master beam. An independent cement weigher is available, if desired.

The company also offers bucket elevators for both cement and aggregate to make complete batching setups. Other standard components available include receiving hoppers, screw conveyors of various lengths, water batchers, and rotary-vane feeders.

The Bin Batcher units are available in 2-compartment models with a total capacity of 21 tons; these are also offered with 2-to-1-ratio compartments. Three - compartment batchers of the same capacity are also made and can be coupled with the 2-bin units for any desired combination. Extensions for the bins can increase total capacity to 40 tons or more per unit.

For further information write to the company, or use the Request Card at page 18. Circle No. 494.

U. S. Steel Appointment

John A. Neyenhouse, Jr., has been appointed assistant district manager of the Newark, N. J., United States Steel Supply Division of U. S. Steel Corp., Pittsburgh, Pa. He joined the company as a salesman in 1951.

New Gripping Chuck For Prestressing Wire

■ A new re-usable gripping chuck for end anchoring wire, strand, or rod in prestressed-concrete construction is announced by Reliable Electric Co., 3145 Carroll Ave., Chicago 12, Ill.

Marketed as Steelcase Strandvise, this new end anchor consists of a heavy steel casing with an internal taper. A three-jaw gripping chuck, comprising several hundred sharp wedge-shaped teeth which engage the wire automatically, a positioning spring, and necessary washers, complete the assembly. The gripping chuck will hold the wire firmly under tensions as low as 300 pounds, and will hold wires ranging from 150,000 to 290,000 psi at 4,000 to 20,000-pound tension.

The manufacturer claims that despite high tensions, release of the gripping chuck is accomplished easily. The chuck is wrapped in a ready-made wax paper cone available from the company, and this reduces the bind. The gripping chucks are available in six standard sizes.

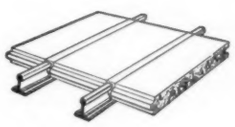
For further information write to the company, or use the Request Card at page 18. Circle No. 349.

Universal Concrete Pipe Moves Eastern Office

The eastern sales office of the Universal Concrete Pipe Co., Columbus, Ohio, formerly in the Graybar Building in New York City, has been relocated at 85 Harbor Road, Port Washington, N. Y. The new mailing address is Box 728, Port Washington, N. Y.

ROOF PLANK

. . . TILE



Tectum texture challenges design and decorative concepts. At close range or at normal building distances, its textural scale persists. Swirled fibrous surface lends distinctive decor and invites close acquaintance.

Tectum® products are your opportunity to utilize this texture with a combination of attributes never before available.

Either Tectum Roof Plank or Tile allows versatility of design in a single layer deck at less cost. Look at these properties: acoustical, insulative, non-combustible, structural, stable, light-weight, termite and fungus proof.

SEE IT NOW!
Ask for sample and catalog, or refer to Section Te/2e, Sweet's Architectural File.

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NEWARK, OHIO

TECTUM CORP.
Dept. #135, 105 South Sixth Street, Newark, Ohio
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_____ Send catalog.
Name _____
Address _____
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Controlled Vibration Speeds Handling of Bulk Materials with

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VIBRATORY FEEDERS

Variable speed controls simplify multiple feeding set-up.

Installed in groups for capacity feeding of several different materials on blending operations—or singly for handling large tonnages, Syntron Feeders assure accurate, finger-tip controlled feeding of most materials from heavy ores to fine powders. Electromagnetic—no mechanical wearing parts.

Write for complete Tool Catalog—FREE ➡

SYNTRON COMPANY
227 Lexington Ave. Homer City, Penna.

Ditcher and Backhoe Team Up on Sewer Job

Traffic delays are kept to a minimum on city's streets as trenching job is done by unique equipment combination

The first of two parallel 51-inch-wide and 11-foot-deep cuts required for Miami's interceptor sewer line is made by a Buckeye 51 ditcher. This cut is backfilled to provide track support while the second trench is dug.

BACKFILLING a sewer trench before the pipe is laid, now a common practice on Miami's new interceptor line, may bewilder the sidewalk superintendents, but it makes a lot of sense to the contractor.

The reason for this odd sequence of construction operations is the presence of native coral known as oolite. Not only is the white rock difficult to dig with a backhoe, but it also breaks up into large chunks that must be crushed before being used as backfill.

This digging problem became acute earlier this year when joint-venture contractors building the city's new interceptor sewer system were called upon to lay several miles of 72-inch concrete pipe in deep coral trenches 108 inches wide. Blythe Bros. Co., Charlotte, N. C., and W. T. Price Dredging Corp., Miami, Fla., low bidders on the $6,727,000 job, investigated several methods and soon came up with a new technique in sewer construction.

Ditcher-Backhoe Team

A Buckeye Model 51 trencher first makes a 51-inch-wide cut about 11 feet deep. The cut is then backfilled to provide track support while a second parallel cut, 51 inches wide and 11 feet deep, is made 6 inches from the first cut. The second cut is

Rugged Work and a hose to match!

U. S. 4810 Air Hose

Jagged rocks, grinding gravel, severe cold and sun checking, punishing impacts from heavy equipment—all these were faced *and licked* by the "U. S." engineers who designed U. S. 4810. Reason enough why it's become one of the most popular of all hose for mines, quarries, shipyards and general construction work.

Combining super adhesion, great strength, high resistance to cuts and abrasion, and extreme *flexibility*, U. S. 4810 is recommended for all pneumatic tools and air drills, for use *wherever* high working pressures, abrasion, and general abuse pose problems.

Service-packed, economical U. S. 4810 Air Hose is available from your "U. S." distributor, any of our 27 District Sales Offices, or by writing to the address below. *Whatever* your hose requirements, you'll find it pays to turn to "U. S." There's a job-engineered U. S. Hose for practically every purpose—an expert staff of "U. S." Engineers to assist you with your hose selection.

- tough, flexible tube of neoprene provides top oil resistance
- high-tenacity, tire-type cable rayon braids give tremendous carcass strength
- thick cover of cut-resistant natural rubber wards off damage from rocks, tools, and equipment

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"How to operate excavation equipment"

New book just published covers proper operation and control of all types of equipment including shovels, tractors, graders, rollers and other machinery.

This book saves time and money in training new personnel, and provides handy tips which mean less down time.

Circle number 500 on the bound-in Red Request Card for more details on "How to operate excavation equipment", plus handy order form.

Contractors and Engineers
magazine of modern construction
470 Fourth Avenue, New York 16, N. Y.

After a backhoe has excavated loose coral material and a 108-inch-wide ditch has been cut down to finished grade, the 72-inch pipe sections are lowered into place. *C&E Staff Photo*

Backfill is placed around the completed pipeline by a Drott Skid-Shovel. The coral is hauled to the Drott machine by truck from trencher excavations and compacted by workmen, background, with pneumatic tampers. *C&E Staff Photo*

also backfilled. The trencher makes a full cut at the rate of 2 feet per minute but, because of interruptions at service mains, daily production is usually limited to less than 500 feet.

Then as pipe-laying crews move ahead, a Northwest 2½-yard backhoe rapidly removes the loose coral and cuts the ditch down to finished grade where it exceeds the 11-foot cut of the trencher. After the big 16-foot sections of pipe are laid, the ditch is quickly and easily backfilled. This saves time and limits the length of street blocked off to traffic.

Hough Payloaders and Drott Skid-Shovels backfill with loose coral hauled by truck from trencher excavations.

The ditcher-backhoe method is working very well and contributing to early completion of the big job. The new interceptor system is expected to be in operation by late 1956. Details on the over-all project will be presented in a future issue of CONTRACTORS AND ENGINEERS.

Personnel

W. D. Fairfax is project manager for Blythe-Price. W. A. Boyd is resident engineer for Connell & Rader, supervising engineer. W. A. Glass is director of the Department of Water and Sewers.

THE END

ATOM-IZIT

SPRAY

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Diesel or Gasoline Engines

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"We solved this problem by eliminating 5 different oils"

Here is the case of a large Pennsylvania contractor, so thoroughly mechanized that even his wheel-barrows were gasoline powered. And strangely enough, this intense mechanization was the root of the company's problem. Too many different types of oil were resulting in confusion and *misapplication*.

On one of his periodic visits, Sinclair Lubrication Engineer Harry Donovan was asked for his recommendations. Mr. Donovan reports, "It was plain that the perfect solution would be *one oil* suitable for heavy duty diesel, medium duty gasoline and light duty air-cooled engines.

Mr. Donovan continues, "I suggested SUPER TENOL®, knowing from previous experience that it would offer maximum protection against cold engine sludge in the lighter operations . . . and provide the necessary film strength and anti-oxidant qualities needed in the heavy duty diesel operations. The company accepted my recommendation and *eliminated 5 different oils*. Moreover, SUPER TENOL has prevented any further confusion or misapplication of oil."

SINCLAIR LUBRICANTS

Why not give a Sinclair Lubrication Engineer the chance to help solve your lubrication problems. *There's no obligation.* Contact your local Sinclair office or write Sinclair Refining Company, 600 Fifth Avenue, New York 20, N. Y.

Aluminum Safety Hats Offered in Colors

■ Aluminum safety hats in a variety of colors are available from E. D. Bullard Co., 275 8th St., San Francisco, Calif. The Bullard safety hats and caps are produced with special metal dyes, with models available in yellow gold, bronze, blue, grey, green, and the standard silver.

Models offered include the 12-ounce Roughneck, a full-brim hat, and the 10-ounce short-brimmed Shorty. Both are made of aircraft-grade aluminum and are reported to have strength far beyond what their light weight would indicate. The hats pass all standard drop tests for impact resistance.

The standard Bullard Universal headband, which is adjustable to head sizes from 6⅝ to 7¾, fits both

the Roughneck and the Shorty hats.

For further information write to the company, or use the Request Card at page 18. Circle No. 373.

Airfield Blacktop Seal And Applicator Described

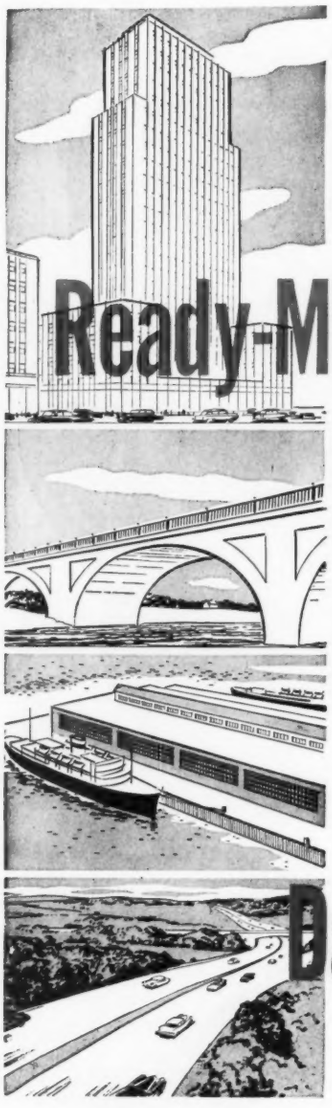
■ The use of a surface seal that protects bituminous-paved airfields from jet-fuel exhaust is described in a folder from the Maintenance Engineering Co., Philadelphia, Pa. Meco Surface Seal protects the paving not only against the ordinary accumulation of jet fuel from the exhaust, but from all other accumulation of grease and oil resulting from the cleaning and servicing of planes. The applied seal is also said to increase the life of the blacktop paving by delaying oxidation and protecting against snow-melting materials and spilled acids and alkalies.

Also illustrated in the folder are two models of a self-powered applicator for the surfacer. The applicator, which has a spread of 48 inches and holds 125 gallons, is made by the Turner Applicator Co., Inc., Port Jefferson, Ohio.

For literature on either Meco Surface Seal or the Turner Applicator write to the Maintenance Engineering Co., 16 W. Johnson St., Philadelphia 44, Pa., or use the Request Card at page 18. Circle No. 431.

Blaw-Knox Shifts Weiblen

The transfer of Carl F. Weiblen from Pittsburgh to Chicago as sales engineer for the Blaw-Knox line of clamshell buckets for industrial use has been announced by Blaw-Knox Co., Pittsburgh, Pa. Mr. Weiblen has been associated with the clamshell bucket business for more than 35 years, the last 15 of which he has spent in the bucket division of Blaw-Knox.



For any construction,

Ready-Mix Plants

can supply air-entrained

Concrete

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Darex AEA

DAREX AEA is the world's most widely used brand of air entraining agent. Not a by-product, it is specifically formulated to do just one job; help you get superior results. Concrete made with DAREX AEA will save you money because it places easier, finishes faster and better, has finer surface texture, is more durable.

Ask your nearby Ready-Mix plant for concrete made with DAREX AEA to insure the full benefits of air entrainment.

D A *Construction Specialties Division*

DEWEY and ALMY Chemical Company

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DARASEAL concrete curing compound • DARACONE masonry water repellent • DARALITE for lightweight aggregate

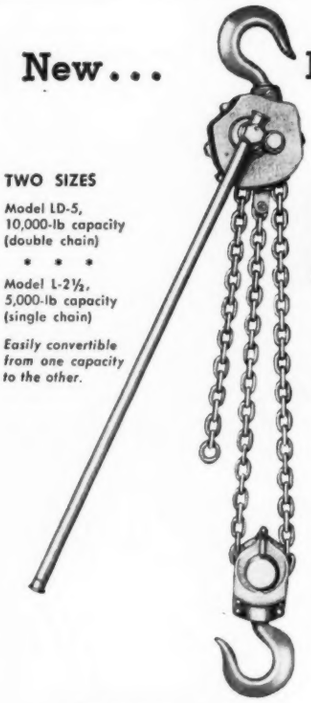
New . . . Different . . . Better

COFFING

Super Power

COIL CHAIN

RATCHET LEVER HOIST



TWO SIZES

Model LD-5, 10,000-lb capacity (double chain)

• • •

Model L-2½, 5,000-lb capacity (single chain)

Easily convertible from one capacity to the other.

For over two years the entire production of Coffing's new Super Power Ratchet Lever Hoist has gone into military service. Now it is available to bring new standards of ratchet hoist performance to civilian users. These are just a few of the advantages this new hoist offers:

SIMPLE in design

Parts are simple, rugged and few in number to assure continued top performance. May be disassembled in the field for fast, efficient servicing.

The only 5-ton hoist of this type using but two chains, contributing to faster operation and lighter weight.

CONVENIENT to use

Handle adjustable for close-quarter applications — also may be operated from opposite side of hoist.

The 5-ton model weighs but 58 lb — lightest weight ratchet hoist in this capacity on the market.

Only 70 lb of handle pull needed to lift 10,000 lb with patented compound lever principle.

You get coil chain flexibility plus free chaining for quick adjustment.

TOUGH for safety and dependability

Ratchets and pawls are specially hardened alloy steel — *every* load-holding ratchet is tested at 30,000 lb.

Housing is certified malleable iron to protect hoist from rust and damage.

Handle is designed to bend before hoist is overloaded beyond safe limits.

For full details, write for Bulletin C10L.

IN PUNISHING "DROP TEST," the Super Power had to withstand the shock of a 10,000-lb load dropped 4 in.— *an impact load of over* 40,000 *lb.* After several hundred such tests of Super Powers, there has never been a hoist failure!

COFFING HOIST COMPANY • DANVILLE, ILLINOIS

Originators of the Ratchet Lever Hoist

QUIK-LIFT ELECTRIC HOISTS • HOIST-ALLS • MIGHTY-MIDGET PULLERS • SPUR-GEAR HOISTS DIFFERENTIAL CHAIN HOISTS • LOAD BINDERS • I-BEAM TROLLEYS

$175 Million Project Planned for Long Island

Construction of a $175 million integrated industrial community is expected to begin early next year on a 2,000-acre tract of land on Long Island. Brown & Mathews, Inc., New York, N. Y., will be the consulting and design engineering firm for the project, which will be built on a triangular-shaped site in Suffolk County about 56 miles from New York City.

Five hundred acres, or 20 million square feet of the southern section of the site, has been set aside for industrial development, including manufacturing plants, warehouses, and commercial buildings. In the northwestern section, 1,200 acres will contain the residential community. Several shopping areas will cover a total of 160 acres, and the remainder of the property will be given over to parks and schools. Together with the county superintendent of highways, Brown & Mathews is planning roads and streets for the entire development, as well as the installation of all essential utilities.

Equipment-Marking Decals

■ A leaflet listing available sizes of decal transfers for marking equipment is available from the Storer Decal Co., 1558 S. Market St., Wichita, Kans. The company can duplicate any trademark or decal now being used by a contractor. It will also design a new decal of any desired size and containing wording specified by the purchaser. Sketches are returned for approval.

The decals are easily applied and come in a variety of colors. Lots of 12 to 1,000 may be ordered.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 391.

Medium-Duty Grader Has Increased Power

■ The diesel engine on the Galion medium-duty Model 303 motor grader is now rated at 55 hp at 1,800 rpm. It is a 4-cylinder IHC UD-264 with 4-inch bore and 5¼-inch stroke. The motor grader also features eight overlapping forward and two reverse speeds, in combination with four-wheel all-gear tandem drive.

All operations of the blade, scarifier, and leaning front wheels are completely hydraulic. The blade is

adjustable 360 degrees horizontally for operation in reverse, and 90 degrees vertically for bank cutting. The grader can be obtained with either manual or hydraulic booster steering.

For further information write to the Galion Iron Works & Mfg. Co., Galion, Ohio, or use the Request Card at page 18. Circle No. 503.

...Marion Heavy-Duty Bodies and Hoists lead the field in Performance • Dependability • Economy

It takes a mighty tough dump body to stand up under the severe abuse of day after day hauling and dumping. And it takes a powerful, heavy-duty hoist to give dependable, long-life dumping action.

Marion "Designed on the Job" bodies are made to stand abuse. No matter what kind of load, Marion Bodies are constructed to "take it."

With the Marion Heavy-Duty Hydraulic Hoist, there's guaranteed dependability . . . efficiency . . . and long-life operation — found in all Marion "Designed on the Job" hoists.

Find out for yourself why more and more truck owners are switching to Marions. See your nearby Marion distributor . . . or write direct . . . today.

There's no finer combination for handling your big hauling and dumping problems than a Heavy-Duty Marion Body and Hoist. Designed for compactness and strength, Marion HD hoists handle more work at a low, uniform oil pressure throughout the dumping cycle.

There are no high surge points any time. They have patented equalizing double arm lifts . . . combination oscillating cylinders and roller-type mechanisms. The heavy box subframes are constructed of steel for added strength and durability.

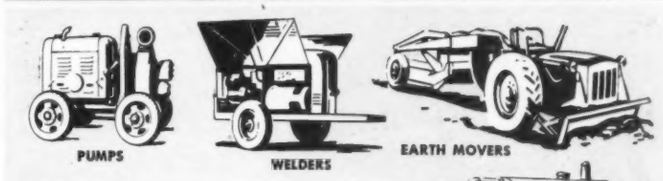
"Designed on the Job"

MARION METAL PRODUCTS CO.
Marion, Ohio, U. S. A.

MARION BODIES AND HOISTS

A complete line of standard and special Hydraulic Hoists and Dump Bodies To Fit Every Need

Ingersoll-Rand GR-105 compressor, operating backfill tamper. Power—Continental Red Seal F-162.



Continental Red Seal power for specialized applications is now available at levels ranging from 2 hp up to more than 1,000, in liquid-cooled and air-cooled models, for use on all standard fuels. And, strictly on the score of *performance*—economy, dependability and low maintenance cost—it is finding its way into more and more leading makes of specialized machines. The equipment builder's good name, and the end-user's satisfaction, are double-clinched by this fact: EVERY CONTINENTAL RED SEAL IS NOT ONLY BUILT FOR ITS JOB, BUT BACKED BY PARTS AND SERVICE FACILITIES COAST TO COAST.

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1252 OAKLEIGH DRIVE, EAST POINT (ATLANTA) GA.

Continental Motors Corporation
MUSKEGON, MICHIGAN

Roofing asphalt is hauled to the job in the insulated trailer, left, and is heated and stored in the tank trailer at right. The hot material, recirculated to prevent congealing in the pipes, is pumped through flexible hoses to the roof. *C&E Staff Photos*

As a Lad-E-Vator reaches roof level, it tips insulating material onto the platform of a "doodlebug". The latter is a remodeled Whiteman fork truck. A quick turn of the steering wheel spills packages from the machine where desired.

Equipment Saves on Labor in W

SEVERAL ingenious machines played important roles in speeding the placing of more than eight acres of roof on three large warehouses at the Great Lakes Naval Training Station. The precast-concrete warehouse buildings, each measuring 200 x 600 feet, were built by Corbetta Construction Co., Inc., New York, N. Y., for the Bureau of Yards and Docks, U. S. Navy, at Great Lakes, Ill. (See "Thin-Shell Precast-Concrete Framing Speeds Warehouse Construction", C. & E., Oct., 1953, pg. 108.) Roofing was done by Brown & Kerr, Chicago, Ill., under a subcontract.

From retaining walls to roof slabs, the buildings were made of precast-concrete sections fabricated in a casting yard at the site and erected by cranes. The finished roof over the precast-concrete deck sections consisted of two inches of Fir-Tex insulation, four plys of asphalt felt laid in hot asphalt, and a final application of hot asphalt and roofing gravel.

Mechanization was in evidence from the time the materials were received on the job to the time gravel finish course was laid. Hot asphalt was delivered to the site in insulated trailer tanks of 3,000 to 5,000-gallon capacity. Viking asphalt pumps transferred the material to a stationary trailer tank which was set up on the job as a storage tank. Asphalt was heated and recirculated in this tank and pumped to the roof as needed. A recirculating line to the draw-off cock on the roof kept hot material available at all times.

At the draw-off cock, 30-gallon drums were filled through a section of flexible metallic hose. The drums were mounted on two-wheel rubber-tire carts which were easily wheeled across the roof to the laying machines by one workman.

The "Doodlebug"

Insulation and roofing felt were brought up to the roof on a Lad-E-Vator portable elevator. The skip

Check these WILEY books . . . .

New 2nd Edition!

FIELD PRACTICE

Volume III of

DATA BOOK for CIVIL ENGINEERS

By Elwyn E. Seelye

Up to date and widened in scope, the second edition of the "field engineer's bible" is almost an entirely new book. It gives all the basic data you need on almost every branch of civil engineering, in one compact pocket-size volume! It tells *what* to do and shows *how* to do it.

Each section opens with a full list of items that must be checked in any given job. These are followed by detailed instructions for the check procedures involved and discussions of special problems which may come up. Finally, in each section, there is a collection of data and general background information, including essays that provide a compact general picture of what to expect in a wide variety of situations.

Vol. III, FIELD PRACTICE, 2nd Ed., 1954, 394 pages, Illus. $7.50
Vol. I, DESIGN, 2nd Ed., 1951, 521 pages $12.00
Vol. II, SPECIFICATIONS AND COSTS, 2nd Ed., 1951, 506 pages $14.00

HIGHWAY ENGINEERING

By the late LAURENCE I. HEWES, formerly of the U. S. Bureau of Public Roads; and CLARKSON H. OGLESBY, Stanford University.

This is a broad but dynamic study—and a practical guide to highway technology in America today. It is an invaluable reference and source of fresh material for any professional man who works in the planning, design, construction, maintenance or operation of our nation's highway and street system. Completely up to date, this work summarizes the latest developments and critically analyzes the many problems which remain to be solved.

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ENGINEERING CONTRACTS AND SPECIFICATIONS—3rd Edition, by ROBERT W. ABBETT, Consulting Engineer. This fundamental guide in the administration of construction work now offers new material on: legal principles, cost-plus-fixed fees contracts, bonding practice, specification writing, and many other useful topics.

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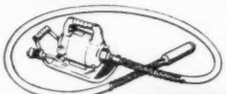

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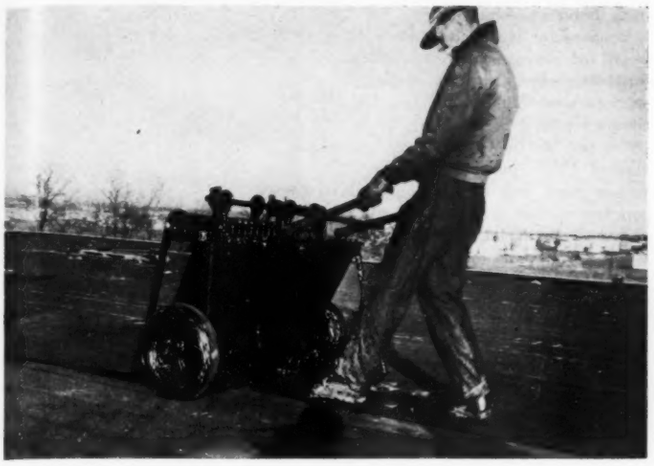
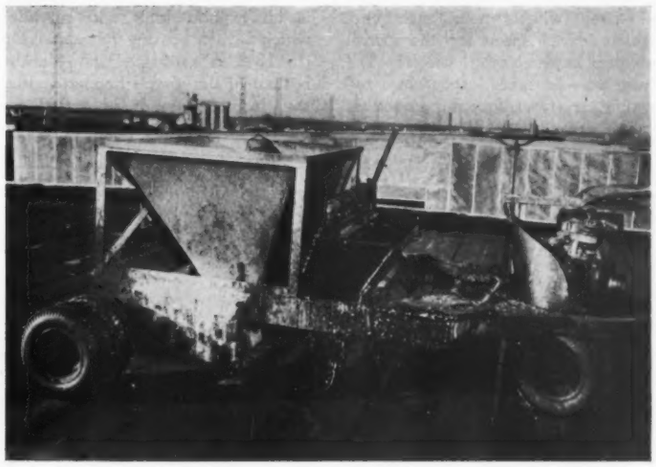
Asphalt is applied to the roof and felt material laid over the asphalt in one operation. The felt is carried on a roller on the machine. Both operations are done as fast as the operator can walk backward, pulling the equipment.



After roofing felt is laid, this gravel spreader applies a coating of hot asphalt and gravel to the roof. Just behind the asphalt tank is a gravel hopper which distributes a uniform covering of the material.



Warehouse Roofing Job

Felt-laying unit, gravel spreader, material-handling truck hasten progress on precast-concrete structure at Navy base

of the Lad-E-Vator tipped as it came to roof level dumping the packages of insulation or rolls of felt onto the platform of a "doodlebug" which carried the materials across the roof to wherever they were to be used. Thus the heavy rolls and packages were not even touched by hand from the time they were loaded on the Lad-E-Vator until they were picked up for use wherever they were needed.

The "doodlebug" was fabricated by Brown & Kerr from a standard factory-type fork truck manufactured by Whiteman Manufacturing Co., Los Angeles, Calif. Extra tires were added to distribute the weight of the machine and its load over a larger roof area, since roofs are not normally designed to carry mechanized equipment. The conventional fork-lifting equipment was removed and replaced with a timber platform large enough to carry the big packages of roofing and insulating materials.

Loads were dumped onto the platform by the Lad-E-Vator, transported around the roof at high speeds, and dumped where they were wanted. A simple quick spin of the steering wheel spilled the packages on the deck, and the "doodlebug" returned to the loading point without even making a stop.

The felt-laying machine, developed by this roofing contractor several years ago, is now widely used on big roofing jobs. One of its early uses on a major project was for the roofing of the Bettendorf, Iowa, plant of the Aluminum Company of America about eight years ago. Machines used on the Great Lakes warehouse job are refinements of the early models and are made by Brown & Kerr in their own shops.

Mounted on rubber tires, the machine consists of a tank for the hot asphalt with a spreading device which applies the material to the roof as the machine is pulled along. The asphalt felt is carried on a roller and applied over the hot asphalt in the same operation.

Gravel Spreader

Developed in 1953, the gravel-spreading machine is a newcomer

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A COMPLETELY MOBILE SETUP for batching and mixing up to 30 cu. yds. per hour of specification concrete using bulk cement, or 21 cu. yds. using sack cement. With this low cost *mobile* ready-mix plant you can handle concrete pouring jobs in any locality without dependence upon local sources.

One man plant crew with truck mixer drivers handles the whole operation—he picks up and weighs stock piled aggregates with the self-loading Willard Weigh-Batcher... cement is added... he dumps material into a hopper from which it is carried by conveyor to the truck mixers.

The Willard "Task Force" has the capacity to keep several truck mixers busy and to handle most average concrete jobs. It offers a way to take these out-of-the-way jobs at your own price. Get the facts; write today for the "Willard Way" booklet.

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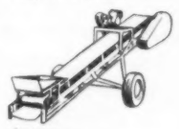

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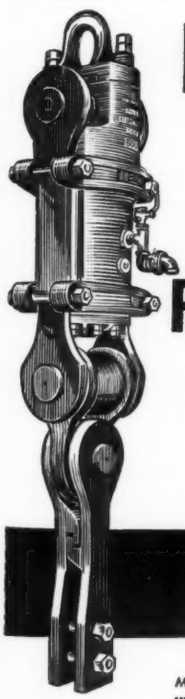

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in the roofing field. This machine, built in Brown & Kerr's shops, has a wide rear axle mounting four rubber-tired wheels near each end, which leaves space for the gravel hopper between the wheels. The front wheels, spaced very close together, are used both for propelling and steering the machine. The operator sits directly over the front wheels.

Just ahead of the gravel hopper is an asphalt tank and spreader which lays a coating of asphalt on the roof. A calibrated gate on the bottom of the gravel hopper applies the desired amount of gravel for the cover coat. A special gravel skip on the Lad-E-Vator hoists gravel to the roof and dumps it directly into the hopper of the spreader, eliminating hand shoveling.

Roofs of the warehouses are composed of precast-concrete sections butted together. Cracks between the sections were filled with mastic and covered with a narrow strip of asphalt felt as the first step of the roofing. Fir-Tex roof insulation 2 inches thick was then laid on the concrete roof slabs. Felt laying machines next placed overlapping layers of felt, each imbedded in asphalt to build up the three-ply roof. Application of the gravel cover coat was the final step. THE END

Fleet of SWENSON-Equipped Trucks Speed Blacktop Jobs

Contractors save money with Swenson Spreaders. Write for information.

Swenson Spreader & Mfg. Co.
Lindenwood, Illinois

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The Washington Densometer is a new field device for testing highway foundation soils.

Field-Testing Device For Highway Soils

■ A new device, permitting accurate field testing of a wide range of soils, makes sample hole sizes of from zero to 0.5 cubic feet. The new device for field testing moisture density and compaction of highway foundation soils is offered by Charles R. Watts & Co., 412 6th Ave., N. W., Seattle 7, Wash.

This testing apparatus is light in weight, compact, portable, and is said to be simple to operate and maintain. Readings can be taken about 3 minutes after the hole is dug, and successive determinations on any number of thin layers can be made up to 22 inches deep in the same hole, singly or in successive lifts.

The Washington Densometer is equally suitable for use in any soil, including fine, coarse, granular base, and surfacing gravels.

For further information write to the company, or use the Request Card that is bound in at page 18. Circle No. 348.

Off-Highway Truck

■ A six-wheel truck designed for off-highway service, the International RF-230, has been placed in production by International Harvester Co., 180 N. Michigan Ave., Chicago 1, Ill. The new model, with a gvw rating of 60,000 pounds, is powered by the new 201-hp International RD-501 engine, which delivers 430 pound-feet torque at 1,600 rpm.

Equipment includes hydraulic steering, air brakes, a 15,000-pound front axle, 46,000-pound rear bogie, 12-volt electrical system, 60-gallon right-side step-type fuel tank, and 15-inch clutch. The standard wheelbase is 175 inches, and optional wheelbases are available.

For further information write to the company, or use the Request Card that is bound in at page 18. Circle No. 488.

Highway Equipment News

The new southeastern district manager for Highway Equipment Co., Inc., Cedar Rapids, Iowa, is George E. Ford. He will serve dealers in Florida, Georgia, South and North Carolina, Tennessee, Alabama, and Mississippi, on the company's new Leader line of spreaders, self-unloading bulk transports, and bulk-feed bodies.

Wire Rope at Work—Spanning the Raritan River near Perth Amboy, N. J., this 4400-ft bridge is an important link in the Garden State Parkway, a $285,000,000 turnpike that will provide almost effortless driving to New Jersey shore points. The Parkway's 165 miles will extend from near Paterson to Cape May, the southernmost finger of the state.

The photograph above shows a 200-ton girder being lifted into place on the bridge piers. Bethlehem wire rope handled the load, and a touchy job it was, too. But Bethlehem rope is made for chores like this, and the job went off without a hitch. A responsible assignment, one typical of the heavy lifting and hauling work entrusted to this strong, supple rope in industries the country over.

Bethlehem Steel Company, Bethlehem, Pa. On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation

Mill depots and distributors the country over stock Bethlehem rope for the following industries and numerous others:
CONSTRUCTION • MINING • PETROLEUM • EXCAVATING • QUARRYING • LOGGING • MANUFACTURING

This barge-mounted Blaw-Knox concrete-batching plant discharges aggregate into a Hi-Boy Trukmixer. The floating unit, while operating efficiently in tight quarters, keeps close to the work, eliminating the need for truck mixers to make long hauls through heavy traffic.

Truscon Sales Changes

Serving as vice president, director of sales, for Truscon Laboratories, a division of Devoe & Raynolds Co., Inc., Detroit, Mich., is James E. Blue. Mr. Blue joined the Truscon organization 39 years ago, and has served in various capacities.

Glen A. Mooney, who joined the division in 1947, has become sales manager and assistant to Mr. Blue.

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Model "BT-10" 10 TON

EQUIPMENT INCLUDED: platform, four 8.25x20x12 ply tires, heavy duty electric brakes with automatic electric break-away switch and controls, tires, lights, reflectors and safety chains.

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MILLER research engineers

456 S. 92nd Street, Milwaukee, Wis.

Floating Plant Solves Space Problem on Pier Job

Contracting for nine river piers and a retaining wall being built under the Pittsburgh redevelopment program, John F. Casey Co., Pittsburgh, Pa., ran headlong into a problem before work began. Aside from the 500-foot retaining wall, a total of 2,000 cubic yards of concrete was needed for each of the river piers, which will support the span carrying the Penn-Lincoln Parkway across the Monongahela River.

With the job hemmed in on one side by a busy highway and bordered on the other by the river, the company's first concern was for the space needed for the concrete-batching plant. The Blaw-Knox plant, with a capacity of 100 tons of aggregate and 400 barrels of cement, and capable of supplying 60 yards of concrete per hour, was erected on a barge and floated from the contractor's yard to the work site.

The installation not only eliminates the space problem, but since the barge can be moved into the river, it also keeps the plant near work in progress. Materials are delivered to the plant by barge. There, concrete is mixed by Hi-Boy Trukmixers, delivered to B-K Roller Gate concrete buckets, and placed in retaining walls and piers.

When the redevelopment program is completed, the double-deck bridge will connect with new twin tubes under Mt. Washington, providing access to the South Hills district from near the point of Pittsburgh's Golden Triangle, and forming a new east-west throughway.

Arc Welding Electrodes

■ Descriptive information along with application and procedure data on all Murex mild-steel and low-alloy arc-welding electrodes are included in a new catalog offered by Metal & Thermit Corp., 100 E. 42nd St., New York 17, N. Y.

Designed to be helpful in selecting exactly the right electrode for the job at hand, the new catalog also contains formulas for estimating welding costs, heat-treating procedures, hardness conversion tables, and other useful reference material for the welding engineer, metallurgist, and welding foreman.

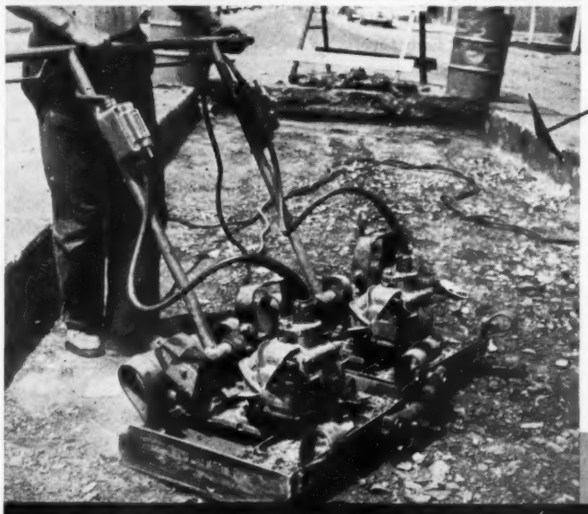
To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 377.

Best way to achieve SPECIFIED DENSITY in ROCK, SLAG, SOIL-BOUND MACADAM, GRAVEL and SAND BASE COURSES..

use JACKSON VIBRATORY COMPACTORS!

On jobs such as this, soil-bound macadam — 5 inches thick, the JACKSON MULTIPLE COMPACTOR, *now more powerful than ever,* achieves specified density in JUST ONE PASS. It is equally efficient on rock, or slag base and all other granular soils.

Quickly adaptable to widening, the JACKSON MULTIPLE COMPACTOR is shown here consolidating slag macadam base course 36 inches wide and 9 inches thick. Using three of the machine's powerful compactor units in tandem, it readily obtains specified density in ONE PASS.



Twin hook-up of manually guided JACKSON COMPACTORS consolidating gravel base for a large pavement repair area. These machines, used singly or in tandem, or side-by-side twin hook-ups, are exceedingly efficient for all types of granular soil base and fill compaction; also for bituminous patching and driveway construction. Operated from a trailer-mounted JACKSON POWER PLANT which may also be used for other power tools and lights.

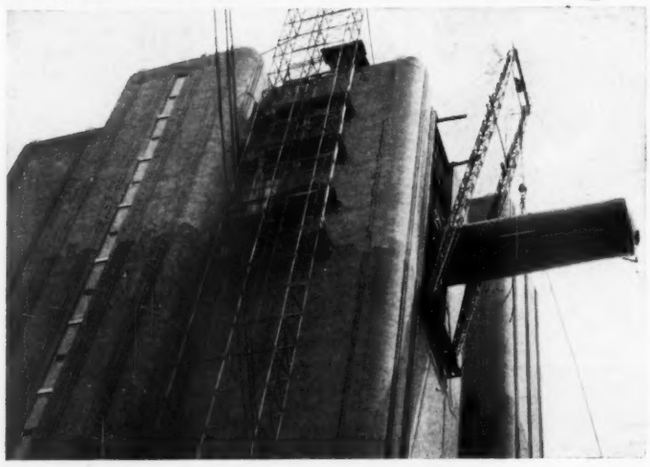
See your Jackson Distributor or write to us for complete information on these machines.

JACKSON VIBRATORS, INC. LUDINGTON, MICHIGAN

A special device manufactured by Roadgrader Gauge Corp. is attached to the top of the blade of a Caterpillar No. 12 motor grader. It rides the top of the form and keeps the blade at the desired depth. *C&E Staff Photos*

A Worthington dual-drum paver and Blaw-Knox spreader move down the line to place the top 3 inches of concrete after welded wire fabric reinforcing has been laid in the 12-foot-wide lane.

17-ton glass-lined Tank going up to top story of stockhouse 198 feet high



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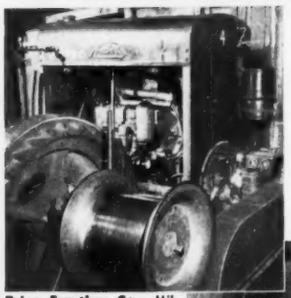
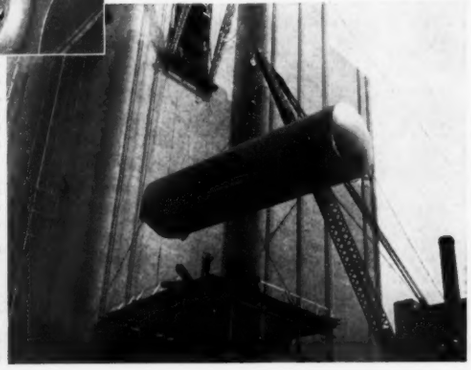


Price Erecting Co., Milwaukee, used a **Thomas Winch** with a six cylinder, 4⅝-in. x 5⅛-in., 517 cu. in. **Waukesha Power Unit** with a Twin Disc torque converter.

Built in 3 phases, Stockhouse I at Miller Brewery, Milwaukee, stores ¼-million bbls. Miller High Life in 240 tanks. Each 1070-bbl. glass-lined tank is 45′ long, 11′6″ diam., weighs 34000 lbs. In the third construction phase, 80 tanks were hoisted to 4 top stories of this 12-story, 198-ft. high stockhouse. Five weeks, 2100 ft. of cable, and *Waukesha power* did the job.

257



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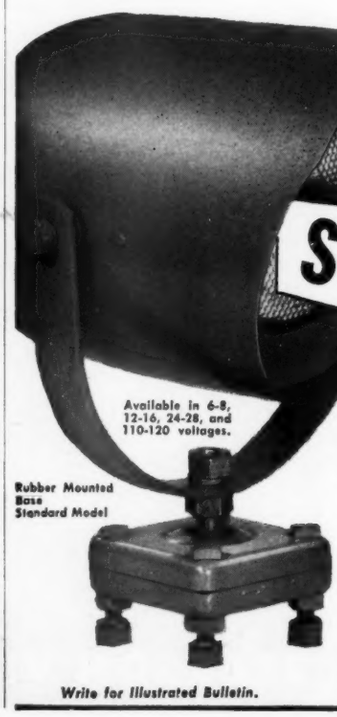
Finisher Cuts Time, Cost On Concrete Paving Job

A NEW hydraulically operated finishing machine which eliminates the need for a longitudinal float and cuts down on the number of hand finishers is helping set the pace for construction of a 10-mile-long stretch of divided highway in northeastern Connecticut. Paving of the 12-foot-wide slabs is moving at the rate of better than 2,200 linear feet in an average day.

M. A. Gammino Construction Co., Providence, R. I., has the $2 million contract to construct this two-lane roadway alongside an existing highway. The job will combine both roads to form a divided road and close the final gap in the Wilbur Cross highway, a main traffic artery running northeasterly through Connecticut from the New York state line to the Massachusetts border. The 10-mile stretch of roadway under construction is just below the Massachusetts border.

Quantities on this job are about average as road construction projects go. Gammino has excavated 500,000 cubic yards of earth and 200,000 cubic yards of rock. Cuts and fills balanced pretty well, with the only borrow material being 30,000 cubic yards of selected fill for bridge areas. About 90,000 cubic yards of selected gravel base is being put down in thicknesses varying from 6 inches to 2 feet. A total of 32,000 square yards of reinforced concrete is being placed in two 12-foot slabs, which are 8 inches thick.

Ten-foot-wide outside shoulders are 2 inches of bituminous concrete on gravel base, and slope one-half inch to the foot. The depressed



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Doing away with the need for a longitudinal float or a large crew of hand finishers, this Heltzel Flex-Plane works closely behind the spreader. Front and back reciprocating screens operate independently.

Contraction joints are cut every 25 feet in the finished slab by two Clipper concrete saws. Water for cooling the saw blade is supplied from the tank mounted on the truck at right. The rod at the front of the unit provides a guide for the cut.

Hydraulically operated machine replaces longitudinal float and gives smooth surface to concrete slabs on roadway project

median strip between the two roadways varies from 13 to 30 feet in width.

Gammino's men began clearing in March of last year. Paving got under way late this spring, and the contractor hopes to complete the job by early December.

In the clearing, grubbing, and excavation phases of the job, the contractor used a fleet of five shovels: a Koehring 1½-yard, a Northwest 2½-yard, a P&H 2½-yard, and two Northwest 1½-yard rigs. A fleet of Euclid bottom-dump and end-dump trucks hauled the material from cut to fill areas, where it was spread by dozers and graders and compacted by a 10-ton Buffalo-Springfield roller.

In preparing the base, selected gravel is trucked in and spread by a Caterpillar No. 12 grader. The Buffalo-Springfield then compacts the material. Later, when forms for the pour are to be set, the grader again goes over the roadbed, cutting out a place at each side for the forms. Workmen with shovels clear the ditches for the forms. After forms are set, the grader again passes over the bed, and the roller makes another compaction pass before concrete is placed.

Use Grader Gage

An adjustable gage rides the tops of the forms to keep the grader blade at just the right depth. Manufactured by the Roadgrader Gauge Corp., the device is attached to the top of the blade at either side. By riding the top of the 8-inch forms, it holds the blade at a constant level

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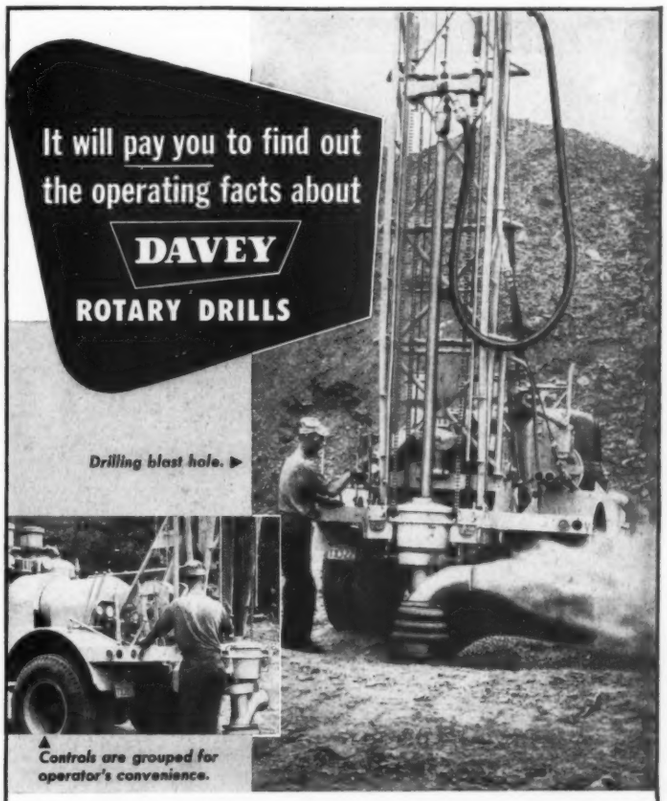
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Here, at last, is the new line of rotary drills that operators have always wanted and needed.

Available in several "air blast" or "mud pump" models to meet individual requirements, Daveys drill faster and more economically than previously available units. For example, rated capacity of Model M-8A (as illustrated) is 5⅝ inch holes to a depth of 300 ft. with air and 7⅞ inch holes to 2,000 ft. with mud. Suitable for mounting on any make of truck, Davey Rotary Drills may be driven from the truck engine by a power take-off or by a separate gasoline or diesel engine. AA-500

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acker the most versatile "All Purpose" digger you can buy!

Before you buy any ordinary digger, see and try Acker's brand new "All Purpose" digger. For this compact, portable, moderately priced digger has everything!

New, exclusive patented features result in a more compact, lightweight unit whose speed, capacity and overall operation out-performs many larger, more expensive machines.

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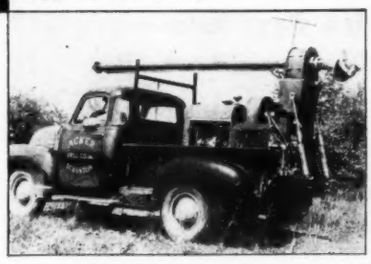
Write today for Bulletin 40— C&E.



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a complete line of Soil Sampling Tools, Diamond and Shot Core Drills, Drilling Accessories and Equipment

(Continued from preceding page)

and governs the amount of cut in the finegrading operation.

Eight-inch-high Blaw-Knox steel forms are used. Form pins are driven by a Worthington hammer supplied with air by a Worthington portable compressor. A total of 6,000 feet of forms is required to allow for setting up operations ahead of the paver. Prefabricated expansion joints are placed every 100 feet, and contraction joints are cut every 25 feet after the slab is cured. Welded wire fabric placed about 3 inches from the top of the slab provides reinforcing.

The most unusual feature of Gammino's paving spread is a Heltzel Flex-Plane hydraulically operated finishing machine, which works closely behind the paver. The reciprocating screeds give a smooth finish to the concrete, and the contractor has found that the machine does the work of a longitudinal float very satisfactorily.

Heading the paving spread is a Worthington dual-drum paver working outside the forms. Twelve batch trucks, each carrying three 1½-yard batches, deliver concrete to the paver, where it is mixed for 1½ minutes before being dumped on the roadbed. Following the paver are a Blaw-Knox spreader, a Blaw-Knox finisher, and the Flex-Plane, in that order. Workmen use Cleveland aluminum lutes to hand-finish the concrete.

Water is supplied to the paver by two 2,500-gallon tank trucks, each equipped with two Marlow pumps. The wagons load at a nearby brook.

The concrete is cured for 14 days. Sisalkraft paper is applied to the finished slab in three longitudinal strips, with the two outside pieces overlapping the forms. When the forms are stripped, the outside pieces of paper are wrapped around the edges of the slab to provide an airtight seal.

Two Clipper concrete saws are used to cut the contraction joints. The 2½-inch-deep cuts are made every 25 feet. Water for cooling the blade operation is fed by gravity from a truck-mounted tank.

Since the roadway is being paved in two 12-foot-wide pours, a keyway is formed on the inside edge of the slabs. Dowels on 5-foot centers also are being inserted across the longitudinal joint.

Batch Yard

Gammino's batch plant is located midway in the project. Aggregate which is hauled to the yard in trucks is stockpiled by a Caterpillar D8 dozer, and lifted to the Blaw-Knox aggregate bin by a Lorain 1½-yard clamshell. The aggregate bin has three 50-ton compartments for large aggregate, small aggregate, and sand.

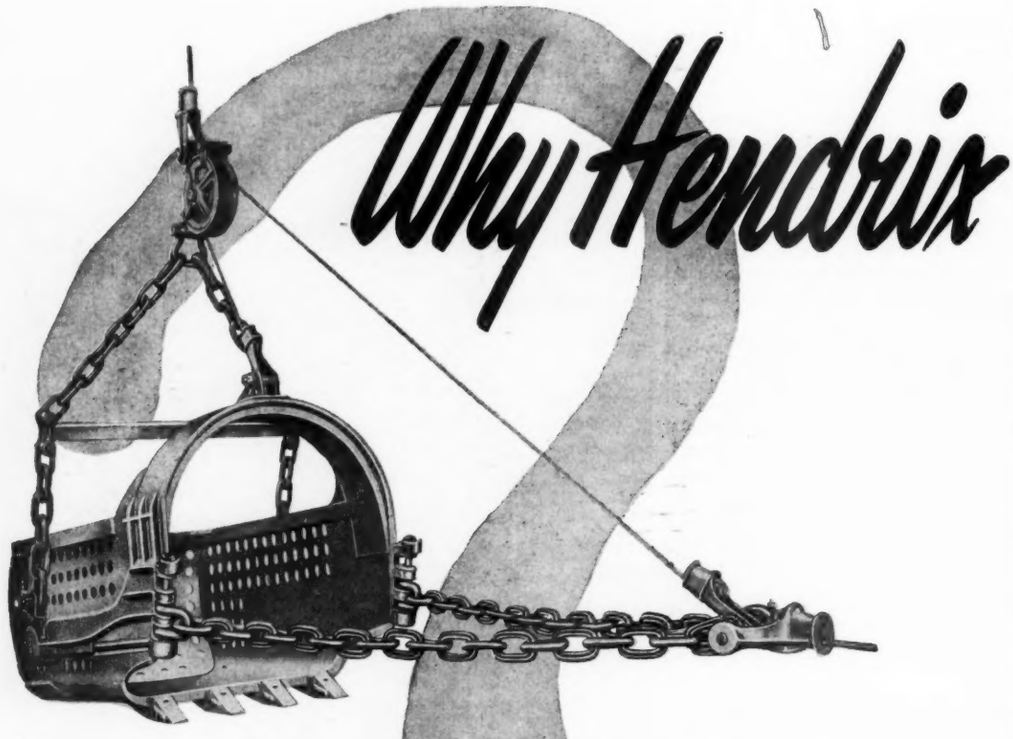
Batch trucks drive under the aggregate bin, where they receive the right amounts of each size from a hand-controlled hopper. The trucks then drive across the yard to the cement bins—two Blaw-Knox 400-barrel silos fed by a screw conveyor and a bucket elevator. One of the cement bins is mounted on a steel framework like the aggregate bin, permitting the trucks to drive beneath. Cement, too, is dumped in the batch trucks from a hand-controlled hopper.

Bulk cement is first brought by rail to a point several miles from the batch yard. Here a screw conveyor and a bucket elevator transfer the cement from the railroad cars to a 400-barrel storage bin, from which trucks load for the haul to the batch yard. At the yard, the trucks dump into a hopper, and the cement is carried by screw conveyor and bucket elevator to the overhead bin.

Each batch of cement contains 6 to 8 ounces of Protex air entraining agent which is added at the paver.

Personnel

Joseph Ricci, Jr., is superintendent for M. A. Gammino Construction Co., Providence, R. I., on the job. The project, being constructed for the Connecticut State Highway Department, is located in District 1 of the department, of which Edwin B. Burdick is district engineer, with headquarters at Hartford. G. Albert Hill is commissioner of the Connecticut State Highway Department, and Warren M. Creamer is chief engineer. THE END



. . . because HENDRIX from the first has devoted its entire facilities to the manufacture and development of dragline buckets. Result — sturdy dragline buckets unsurpassed for day in and day out operation on every job . . . engineered to dig more in less time for GREATER PROFITS!

⅜ to 40 Cubic Yards

A TYPE AND SIZE FOR EVERY DIGGING PURPOSE

Hendrix Lightweight DB Dragline Buckets

Hendrix Buckets available without perforations on special order.

HENDRIX MANUFACTURING CO., Inc.

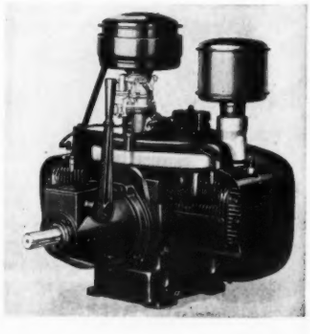
MANSFIELD, LOUISIANA

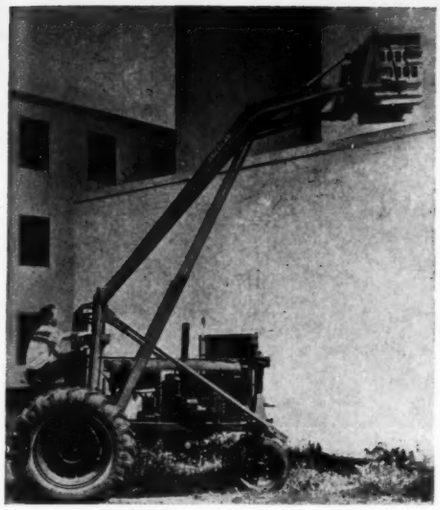
Gasoline Engine Gets New Hand Clutch

■ A new development for the 26.8-hp Kohler K660 air-cooled engine is a hand clutch, according to the Kohler Co., Kohler, Wis. The wet-type lever-operated clutch, designed to engage at all engine speeds, is mounted on antifriction ball bearings.

This latest four-cycle 2-cylinder opposed model, designated as the K660C, carries a number of standard features including a silencer-type muffler, automotive diaphragm-type fuel pump, oil-bath air cleaner, oil-pressure gage, and an air-cooling system.

For further information write to the company, or use the Request Card at page 18. Circle No. 463.





The new Model 40 loader, made by the American Road Equipment Co., lifts building materials to a height of 18 feet.

New High-Lift Loader For Building Materials

■ A new high-lift front-end loader specifically designed for handling building materials has been placed on the market by The American Road Equipment Co., 4302 N. 28th St., Omaha, Nebr. Featuring heavy-duty industrial-type 4-inch hydraulic cylinders and built with a tubular-steel frame, the Model 40 loader mounts on practically all industrial tractors.

Equipped with pallet fork, the new loader hoists 1,500 pounds of block, brick, mortar, or other materials 18 feet in the air to place the load on the scaffold. The loader's full lifting capacity with proper counter-balancing is reported to be 5,000 pounds.

With a wide range of other attachments, the Model 40 can do many other jobs involving pushing, lifting, and loading. A bulldozer blade handles clearing, back-filling, and ramp-building problems. Other attachments include a clean-up fork, a removable plate insert which converts the clean-up fork to a material-handling bucket, an aggregate bucket, a work platform, a chain boom, shovel teeth, and a concrete and mortar bucket.

For further information write to the company, or use the Request Card at page 18. Circle No. 356.

Fuel-Oil Additive For Burner Efficiency

■ A detergent additive for fuel oils that keeps tanks, fuel lines, filters, and burners clean by keeping gums in suspension is described in a folder from the Shaler Co., Waupun, Wis. The additive keeps an oil burner working efficiently by also eliminating soot and carbon scale from heat transfer surfaces, according to the literature.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 457.

Carver Pump Appointment

The new general sales manager of Carver Pump Co., Muscatine, Iowa, is James E. Kuppe. He succeeds Robert E. Tanner, vice president and general manager of the company, in this position.

Long an employee of the manufacturer of centrifugal pumps, Mr Kuppe had previously served Carver as assistant sales manager.

How to Enclose Scaffolds For Winter Construction

■ How to keep wintertime construction jobs progressing on schedule by using enclosed scaffolding for the protection of workmen is the theme of the September issue of PS *Scaffolding Methods*, a quarterly publication of the Patent Scaffolding Co. Practical examples of various cold-weather enclosures for both hanging and built-up types of scaffolding are described, and are illustrated by on-the-job photographs.

Information on types of protective scaffold coverings especially suitable for specific wintertime building conditions is also included.

Copies of the September "enclosed scaffolding" issue of *Scaffolding Methods* are available on request from the Patent Scaffolding Co., Inc., 38-21 21st St., Long Island City 1, N. Y., or use the Request Card at page 18. Circle No. 413.

Core-Drilling Machine

■ A bulletin recently issued by Sprague & Henwood, Inc., 221 W. Olive, Scranton 2, Pa., contains information on the company's Model 142 core-drilling machine. This high-speed heavy-duty diamond drill is covered in a detailed illustrated description, together with complete specifications and working data.

The bulletin also lists the many items of accessory equipment required for successful diamond core drilling, all of which are carried in stock by the company.

To obtain Bulletin No. 160 write to the company, or use the Request Card at page 18. Circle No. 440.

ANOTHER WAY YOU SAVE WITH FORD *TRIPLE* ECONOMY

New Ford F-700 BIG JOB is the low-cost leader of extra-heavy work. Up to 19,500 lbs. GVW, 34,000 lbs. GCW. New gas-saving, LOW-FRICTION 138-h.p. *Power King* V-8.

New driver comfort cuts trucking costs!

Deluxe Cab shown, extra cost.

New Driverized Cabs cut fatigue! Big, curved, one-piece windshield for better visibility. Exclusive Ford *seat shock snubbers* to level the ride. New non-sag springs. New, free-breathing *woven* plastic upholstery that lasts longer, gives year-'round comfort.

"Cut your speed after dark."

Helping the driver do a better job saves money by saving valuable truck *time*. What's more, driver comfort is an incentive for safety and for better vehicle care that prolongs truck life, cuts maintenance costs.

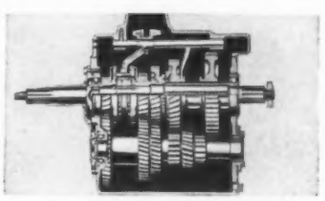
Only a Ford Truck gives you full benefit of these savings. For only Ford has the *Driverized* Cab, most comfortable of truck cabs, with its time-saving controls. For complete information, see your Ford Dealer, or write: Ford Division, Ford Motor Co., Dept. T-10, Box 658, Dearborn, Mich.

SAVE WITH ALL THREE!

1. Gas-Saving Power!
2. Driver-Saving Ease!
3. Money-Saving Capacities!

And . . .
Ford Trucks last longer, too!

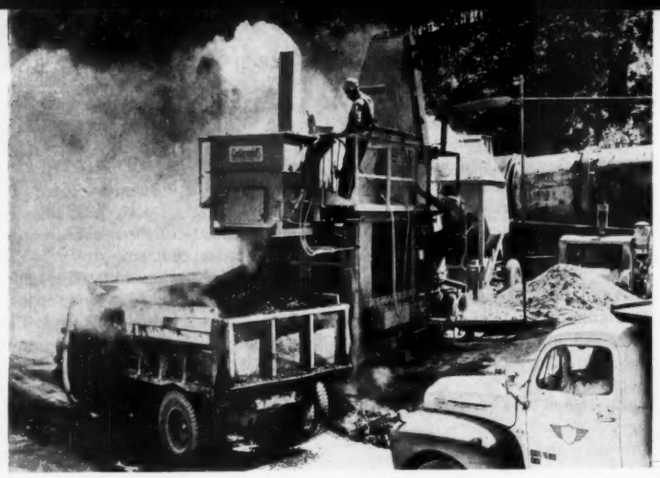
Electric-shift 2-speed axle has faster, more positive shift action than vacuum type. Convenient button control on gearshift lever.



Synchro-Silent transmission for shifting ease. Four-speed standard, 5-speed direct (shown) or overdrive at extra cost.

FORD *TRIPLE ECONOMY* TRUCKS

CONSTRUCTION CAMERA



Haul Distances Cut—By moving this Cedarapids asphalt plant from one location to another, Gene McClain Construction Co., Allerton, Iowa, keeps the hot-mix production close to the laydown machines on Missouri State Highway 45. GM diesel engines power the plant, which turns out 150 tons of material per hour.

Flood Protection—Averaging 1,400 cubic yards per 8-hour day, a Bucyrus-Erie 54-B dragline with a 70-foot boom loads a 15-yard Euclid with sandy clay as it works on a U. S. Army Corps of Engineers flood-control project in California's San Fernando Valley in the southern part of the state.

Crushing Life Increased 14 Times *by* **Hard-Facing**

The hard-faced rolls on this rock-crusher mill have been in constant operation for six years. During this time, the rolls have been pulverizing such abrasive materials as ferro-alloys, ore, dolomite, feldspar, rock, sand, and clay used for making brick. Unprotected rolls, performing the same operations, had to be replaced every four or five months.

The serrated roll shown at the right in the photograph is the roughing roll used for initial grinding or milling. The smoother roll, at the left, is a finishing roll used to grind the abrasive materials into a powder. Both rolls were hard-faced with HAYNES STELLITE alloy by the metallic-arc process to protect them from abrasion.

There are 14 HAYNES alloys . . . each developed to resist certain conditions of wear. Some of these alloys are hard and abrasion-resistant, some are tough enough to stand up under heavy impact . . . others resist corrosion, erosion, or heat. Use them to protect bull-dozer blades, dipper bucket teeth, sheepsfoot tampers, tractor rollers and other metal parts exposed to wear.

Your dealer carries a complete line of HAYNES hard-facing rods. Ask him for our descriptive literature. If you don't know the location of your local dealer, write to Haynes Stellite Company, a Division of Union Carbide and Carbon Corporation, Kokomo, Indiana, for full details.

See... Your local Haynes Stellite Dealer

or

Write... to Haynes Stellite Company

"Haynes" and "Haynes Stellite" are registered trade-marks of Union Carbide and Carbon Corporation.

M-C & S Prepares to Move Vessel Overland to Museum

One of the most unusual jobs in its 94-year history of construction and marine-salvage work has been undertaken by Merritt-Chapman & Scott Corp., New York, N. Y. The heavy-construction firm is preparing to beach a 210-foot-long 700-ton steamboat and transport it two miles overland to a permanent museum berth.

The Shelburne Museum, Shelburne, Vt., has engaged M-C & S to move the excursion steamboat "Ticonderoga" from Shelburne Point, on Lake Champlain, to the lawn of the Shelburne Museum, where the craft will be placed on a concrete and steel foundation. The trip overland will be made by direct route—through corn fields and pastures, across two highways, across railroad tracks, and over a brook.

M-C & S is constructing a berthing basin 250 feet long, 35 feet wide, and 7 feet deep at Shelburne Harbor. The steamboat will be floated to the basin through a 600-foot-long channel. Railroad tracks are being laid at the inshore end of the basin and freight car trucks—carrying a specially designed cradle for holding the boat—will be positioned on the tracks. After the "Ticonderoga" is floated into the basin, the trench will be dewatered by breaking a surrounding gravel and clay dike, leaving the vessel resting on the railroad cars.

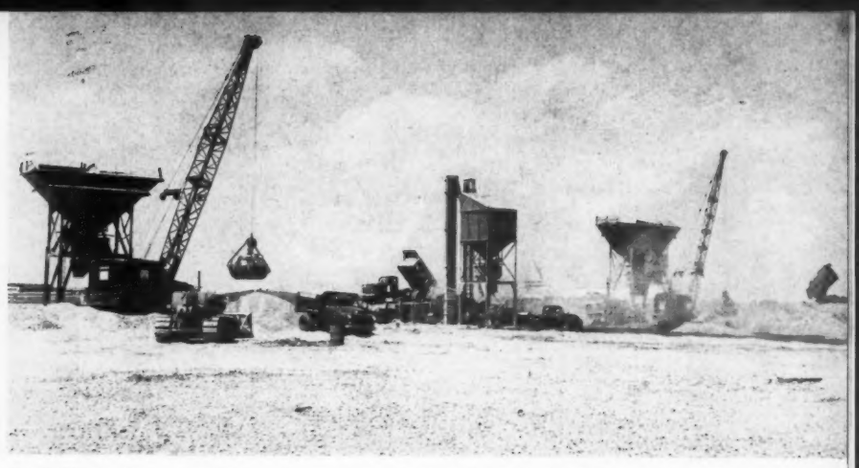
Several hundred feet of track will be laid ahead of the cars as the overland haul is made, and as the trip progresses, the track behind will be picked up and laid down ahead. At the museum, the boat will be jacked off the freight trucks and positioned on the permanent foundation.

The 1,200-passenger steamer is the last New England sidewheeler in active service.

Promotions at Caterpillar

Succeeding L. L. Morgan as assistant sales manager, Plains Division of the Caterpillar Tractor Co., Peoria, Ill., is Louis E. Schumacher. He was a district representative in the Central and Plains sales divisions and a supervisor of field engineers in the sales-development division before his present appointment. Mr. Morgan has been made manager of the sales-development division.

Long Pilings for Long Bridge—On the way to the Straits of Mackinac are 93 and 78-foot lengths of Armco spiral welded pipe piles which will form foundation pilings for the 5-mile bridge joining Michigan's two peninsulas. The piles are carried on five railroad cars.



Batch Plant—Coarse aggregates, cement, and sand supply batch trucks from these three Blaw-Knox plants laid out in a row by Fred Weber, Contractor, Inc., St. Louis, Mo., for a paving contract at Lambert Municipal Airport, St. Louis. Lorain cranes feed material to the aggregate bins. A Caterpillar tractor-dozer, at left, stockpiles material dumped by trucks.

Army Division Engineer Named for the Southwest

Col. L. E. Seeman has been named Division Engineer, Southwestern Division, of the U. S. Army Corps of Engineers, to succeed Brig. Gen. Herbert D. Vogel. The Southwestern Division has jurisdiction over the Galveston, Albuquerque, Tulsa, Little Rock, and Fort Worth districts. He will have headquarters in Dallas, Texas.

Since 1953, Col. Seeman has been with the office of the Comptroller of the Army. He was District Engineer of the Alaska District from 1949 to 1952. Prior to that he served in the Central Intelligence Agency, the Manhattan Engineer District, in the China-Burma-India theater of operations during World War II, and with the Nicaragua Canal Survey from 1934 through 1936. He was commissioned in the U. S. Army Corps of Engineers after being graduated from the U. S. Military Academy at West Point in 1928.

In other changes, Col. Otto J. Rohde, who has been serving in the European Command, has been named District Engineer at St. Paul, Minn. He succeeds Col. Aldo H. Bagnulo, who has been named Area Engineer in Iceland. Col. Ralph King, formerly of the Iceland post, has been assigned to the staff and faculty of the Command and General Staff College, Fort Leavenworth, Kans.

Booklet Covers Wide Line Of Construction Blocks

■ A wide variety of blocks for construction use are illustrated in a catalog from McKissick Products Corp., Box 2496, Tulsa, Okla.

Extra-heavy oval-pattern blocks are listed in single to octuple-line units, with working loads of 5 to 180 tons. Diamond-pattern blocks are available in the same capacities. Other items shown include heavy weight blocks and medium-weight blocks in both oval and diamond types.

The company offers blocks in sheave sizes from 6 to 42 inches with one to ten sheaves in any capacity.

McKissick construction blocks are available with swivels of all types and hangers to fit any type of fitting.

To obtain Bulletin CB-53 write to the company, or use the Request Card at page 18. Circle No. 433.

Dempster-Diggster bucket GETS A FULL LOAD WITH EVERY STROKE!

The hydraulic crowd and hoist operation of the new Dempster-Diggster GRD-101 gives you big shovel advantages in front end loading and excavation work. As shown in the at-work photos at right, here's what happens: Dempster-Diggster moves into material with shovel lowered against front of frame. No wheel traction is used to get excavation power. The hydraulic crowd and hoist moves bucket out and up following contour of material—getting a full bucket with every stroke . . . reducing loading time and idle truck time, thus getting the job done faster!

When you put your Dempster-Diggster into operation, one of the first things you will find is that your entire operation must be geared to a faster pace. This means greater efficiency of equipment and manpower—more profit to you!

Write us asking for Folder No. 3116 giving you complete information on the features of the Dempster-Diggster, including TRUCK-SPEED MOBILITY TO AND FROM JOBS . . . AUTOMATIC BUCKET TRIP . . . MAXIMUM DUMPING AND DIGGING HEIGHT . . . MINIMUM TURNING RADIUS . . . THE SHOVEL WITH TORQUE CONVERTER . . . HYDRAULIC STEERING, etc. Manufactured by Dempster Brothers, Inc.

In photo below camera catches Dempster-Diggster ready to back off and move up to a truck for loading.

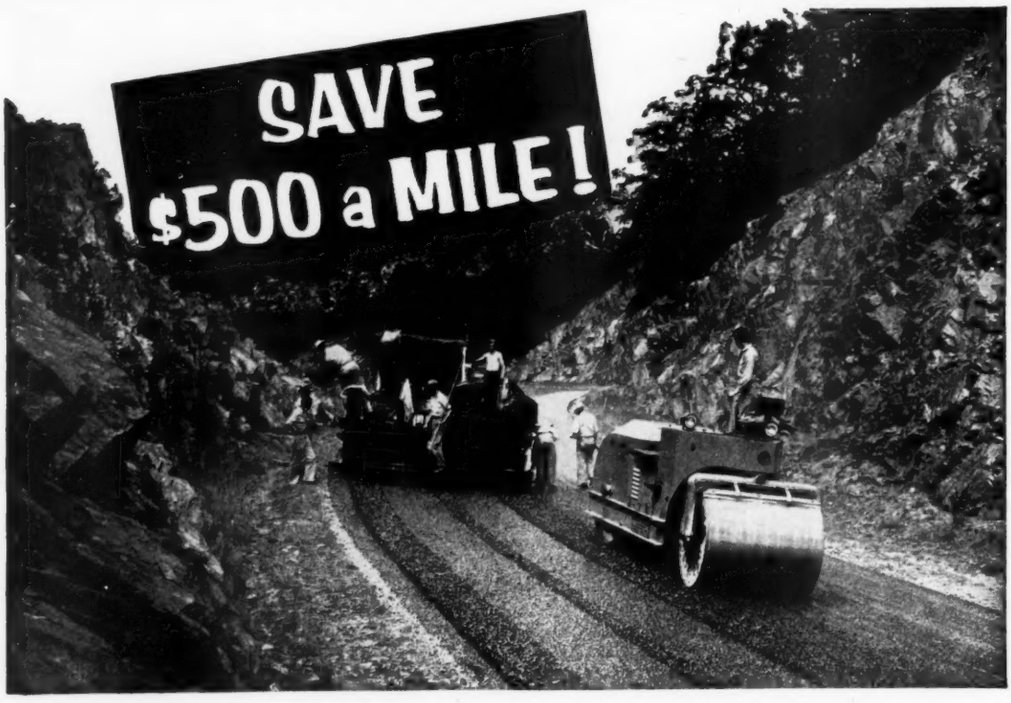
DEMPSTER DIGGSTER

DEMPSTER BROTHERS, 4104 Shea Bldg., Knoxville 17, Tennessee

CONSTRUCTION CAMERA

Lifting Assignment—Four P&H Model 555 truck cranes walk two 125-ton girders into place on a bridge near Los Angeles, Calif. Heisler & Woods, Los Angeles, first used the 35-ton rigs to load the girders onto trucks for the 30-mile haul to the job location.

Grading for Air Base—Material from a cut at the Little Rock Air Force Base, Little Rock, Ark., is loaded into a LeTourneau-Westinghouse Tournarocker by a Northwest shovel during grading operations at the base. W. D. Jeffrey, Fort Smith, Ark., is doing the grading work for roads and buildings at the facility.



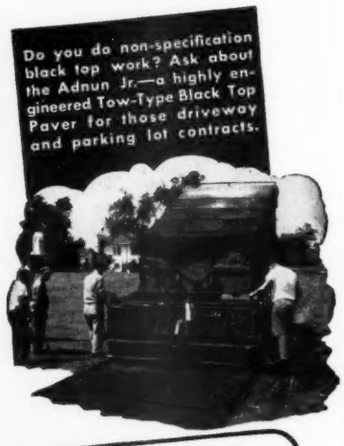
UPWARDS to $500.00 a mile could be the savings you make with the Adnun Black Top Paver, equipped with the Adnun Fluid Level. With the Adnun you can figure right on the "button" and eliminate the excess you pour into a road to be certain of meeting grade line specifications.

If you saved only half that amount, it would be worth it!

The Adnun Black Top Paver is the only paver that can include the Fluid Level along with many other advantages. With the Adnun Fluid Level you have an absolute check on your grade all of the time. The center of the road will be as true as the edge. You take out the dips that won't show under a straight edge.

Overlapping action of the Cutter Bar Screed makes a tight joint and reduces raking. Sturdy construction eliminates the rebuilding so often necessary with other machines. Modern electric screed heating gives better heat, free from danger and the many other advantages combine to assure a fast job at lower cost.

Don't be swayed by preconceived opinions. You owe it to yourself to find out about this and other Adnun advantages. Let us tell you more about it.


Do you do non-specification black top work? Ask about the Adnun Jr.—a highly engineered Tow-Type Black Top Paver for those driveway and parking lot contracts.

ADNUN
BLACK TOP PAVER

BLAW-KNOX COMPANY
FOOTE CONSTRUCTION EQUIPMENT DIVISION
1916 State Street
Nunda, New York
BLAW-KNOX

HRB Reports on Study Of Roadside Design

Two booklets dealing with aspects of highway construction and maintenance other than those dealing with the actual roadway have been published by the Highway Research Board, Washington, D. C. Both are reports of committees appointed to study particular problems relating to roadside construction and development.

"Roadside Development", publication 318 of the HRB, reviews such subjects as stabilized turf shoulders, rutting of shoulders, mowing and herbicides, brush control, trees along roadsides, roadside erosion, and roadside noise, and offers the conclusions gained from study of these subjects. The booklet contains a number of tables and diagrams comparing and illustrating points of discussion.

"Stabilized Turf Shoulders", published as Special Report 19, treats the various methods of shoulder construction and discusses the practicality of shoulders having a stable vegetative surface. Wearing qualities, cost, and maintenance are compared.

"Roadside Development" is priced at $1.35 and Special Report 19, at 30 cents. Either or both may be obtained from the Highway Research Board, 2101 Constitution Ave., Washington 25, D. C.

Rubber-Tire-Mounted Bituminous Paver-Finisher

■ The recently announced Blaw-Knox rubber-tire-mounted bituminous paver-finisher is covered in detail in a booklet from the Blaw-Knox Co., Foote Construction Equipment Division, Nunda, N. Y. The unit features a top working speed of 60 fpm. Travel speed is 4¼ mph.

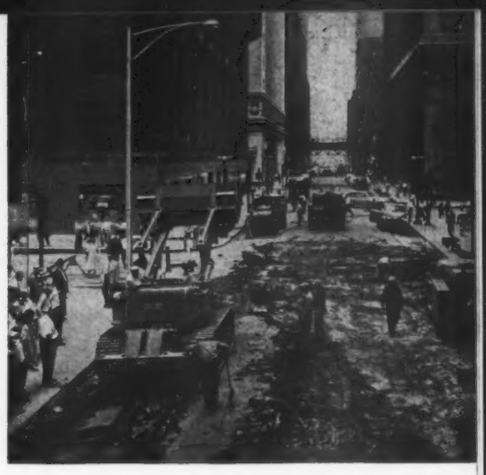
The Blaw-Knox bituminous paver-finisher lays any hot or cold asphaltic material in a pavement width of 8 to 13 feet to a depth of 10 inches.

The booklet covers such features as the speed and simplicity afforded by the rubber-tire mounting, the unit's long wheelbase, the extra-large hopper, and the controls.

To obtain this literature write to the company, or use the Request Card that is bound in at page 18. Circle No. 379.

Big Haul—Borrow material for grading and drainage on a 3-mile section of the Detroit-Toledo Freeway is loaded by a Northwest dragline into a 12-yard truck equipped with a St. Paul hoist.

Airfield Drainage—A Lima pull shovel works on the storm-sewer system under construction at the Springfield, Ohio, Municipal Airport. Joseph Skilken & Co., Columbus, Ohio, holds the $1,817,972 contract for the work.



Blacktop Repair—On Jackson Boulevard in Chicago's Loop, an Allis-Chalmers TR-15 Tracto-Ripper strips blacktop in preparation for repair work. The loose material is being loaded into trucks.

Engineers Council Votes To Admit Smaller Groups

Two constitutional amendments which will permit the admission to its membership of certain national and local groups previously not eligible have been adopted by the Engineers Joint Council, an association of eight major engineering organizations having a total individual membership of 170,000.

The first amendment permits the admission, as Associates, of national organizations with less than 5,000 members, the minimum enrollment previously required for admission to the council. The second amendment admits, as Affiliates, societies which are regional rather than national in geographic scope, and of certain federations of engineering societies.

The amendments were adopted by the council in the interests of increased unity in the engineering profession. Present member organizations of the council are the American Society of Civil Engineers, American Institute of Mining and Metallurgical Engineers, American Society of Mechanical Engineers, American Water Works Association, American Institute of Electrical Engineers, Society of Naval Architects and Marine Engineers, American Society for Engineering Education, and American Institute of Chemical Engineers.

How Modern Earthmovers Do Public Building Work

■ The importance of modern equipment in work programs to develop and increase community services and conveniences is illustrated in a new booklet from the Allis-Chalmers Mfg. Co., Milwaukee 1, Wis.

Action photographs take the reader to a wide range of community projects and illustrate the versatility and year-round use of tractors, motor graders, motor and pull-type scrapers, motor wagons, and power units, with their matched allied attachments. The booklet emphasizes that the multipurpose use of this equipment allows governmental bodies to employ new methods which permit faster completion of projects and ultimate savings in costs.

To obtain this literature write to the company, or use the Request Card that is bound in at page 18. Circle No. 387.

Stick Your Neck Out!

New Hercules Front Mounted Telescopic Hoist Gives You 1000 lbs. Extra Legal Payload

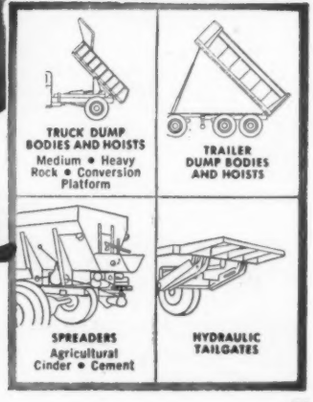
You can haul an extra half-ton of payload FREE on every trip by choosing the sensational new HERCULES Single Telescopic Hoist (Model 1210) for your heavy-duty dump truck bodies eleven to fifteen feet long.

This 20-ton capacity hoist pays for itself quickly because it weighs so much less . . . shifts more load to front axle . . . reduces driver cost per ton . . . and minimizes maintenance. Available for single or tandem axle straight trucks, Model 1210 mounts easily, no part extending below the truck frame.

For larger capacities, HERCULES builds Twin Telescopic Hoists with even greater payload-boosting advantages.

Act now to increase your profits. Write, wire or phone for complete information.

5357


TRUCK DUMP BODIES AND HOISTS
Medium • Heavy Rock • Conversion Platform
TRAILER DUMP BODIES AND HOISTS
SPREADERS
Agricultural Cinder • Cement
HYDRAULIC TAILGATES

Hercules

buy from the line of strongest design

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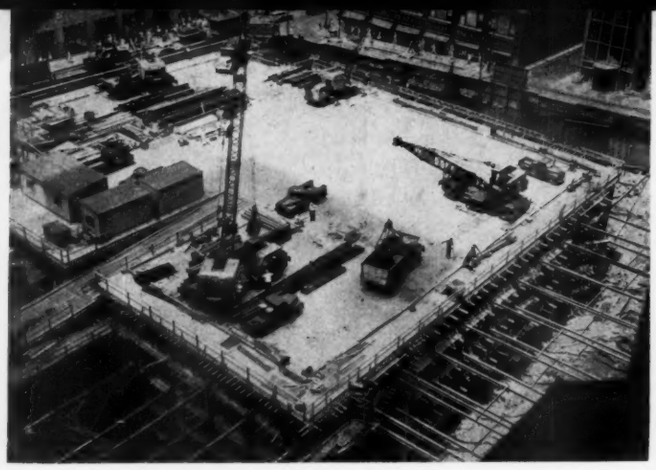
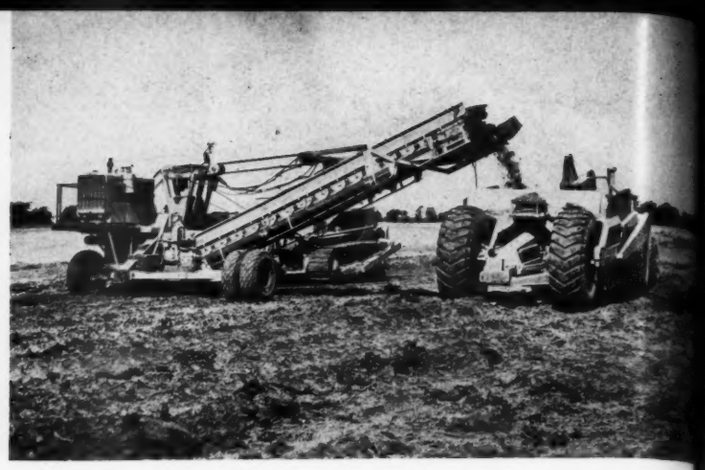
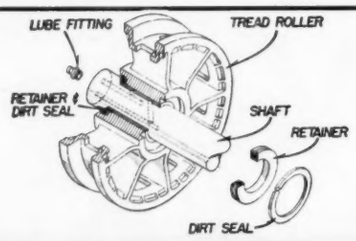
CONSTRUCTION CAMERA



Easing Parking Problems—Four Lorain MC-524 Moto-Cranes, each perched along one side of the building, work atop the five-story underground Mellon Square Park Garage being built in the heart of Pittsburgh. Joint contractors on the 894-car facility are Morrison-Knudsen Co., Inc., and the H. K. Ferguson Co.



Ohio Turnpike Preparation—Using a Sierra Loader powered by a Caterpillar D318 diesel engine and drawn by a Cat D8 tractor, V. N. Holderman & Sons, Inc., Columbus, Ohio, loads a Cat scraper on the Ohio Turnpike. Holderman is constructing four sections of the road—almost a 15-mile stretch.



LIMA DIRT SEALS
CUT DOWN-TIME AND MAINTENANCE COSTS

This LIMA shovel, demonstrates the importance of LIMA'S dirt seals and grease retainers.

In such work, abrasive material which wears out the bushings and shafts of ordinary shovels is excluded. LIMA seals the lubricant in and dirt out, thereby reducing friction and prolonging the life of bushing, roller and shaft.

COMPARE! No other machine gives you as much as LIMA!

1. Bronze bushings in tread, idler and drive rollers are protected by piston-type dirt seal rings and retainers.
2. All gears, smaller parts and shafts which are subject to extra wear are flame or induction hardened for longer life.
3. Main machinery is placed well back of center of rotation to eliminate excess counterweight.
4. Anti-friction bearings, used at all important bearing points, reduce destructive friction, fuel consumption and lubrication requirements.
5. Big capacity drums and sheaves lengthen cable life by reducing the need for double wrapping and sharp bends in cable.
6. Full air controls on travel, hoist, swing and boom hoist, result in smoother, more precise operation, minimum maintenance and less operator fatigue.
7. Torque converter (optional) automatically adjusts speed to load requirements, minimizing shock loading, making performance smoother and faster.
8. Wherever you are, you can depend on skilled service and nearby warehouse stocks of parts to keep your LIMA on the job continuously.

COMPARE and you'll specify LIMA for shovels (¾ yd. to 6 yds.), cranes (to 110 tons) and draglines (variable).

DISTRIBUTORS IN ALL PRINCIPAL CITIES OF THE WORLD

LIMA
SHOVELS • CRANES
DRAGLINES • PULLSHOVELS

BALDWIN-LIMA-HAMILTON CORPORATION
Construction Equipment Division
LIMA, OHIO, U.S.A.

BLH Construction Equipment Division

Military Projects Near Completion in Alaska

Eighty-one separate projects under construction at Army and Air Force installations in Alaska are slated to be completed and available for use before the end of this year. Costing a total of $86 million, the projects represent the heaviest concentration of defense construction to be completed in a six-month period (July to December) since the start of the U. S. Army Corps of Engineers' multimillion-dollar military-building program in Alaska.

A record year has been forecast for the current fiscal year—July 1, 1954, to June 30, 1955. During that period, more than $145 million worth of military defense construction is scheduled to be completed.

Fifty of the projects scheduled for completion by December were begun in 1953 under a two-year contract; 22 were started early this year, and the remainder were begun in 1952. Ladd and Eielson Air Force Bases have 38 of the projects, and the remainder are divided among Elmendorf Air Force Base, Fort Richardson, and installations at Big Delta, Whittier, Kenai, Naknek, Takotna, Galena, and Wales.

The projects include housing units, warehouses, post exchanges, dispensaries, power plants, electrical distribution systems, and sewer, water, power, and other utility installations.

Comprehensive Catalog Of Air-Powered Equipment

■ The Joy line of pneumatic equipment for the contractor is covered in a booklet available on request. The literature illustrates portable and stationary air compressors, and both rock and wagon drills, and includes a guide to the average number of tools that may be operated by compressors of various sizes.

Sections are also devoted to paving breakers, backfill tampers, and drifters. Sheeting drivers, trench diggers, portable hoists, air motors, air hose, and drill bits are among other items included in the varied line.

To obtain this literature write to the Joy Mfg. Co., Henry W. Oliver Bldg., Pittsburgh 22, Pa., or use the Request Card at page 18. Circle No. 450.

Service for Customers—For its new $3,500,000 store in Trenton, N. J., Arnold Constable is building an underground parking area for 500 cars. Here excavation is being handled by an International TD-9 crawler tractor with a Drott Skid-Shovel. W. H. Courtney, Inc., Trenton, N. J., is handling most of the earthwork.

Large Project—Concrete is placed by a Bucyrus-Erie crane for the 10-story annex to the Milwaukee County General Hospital, one of the biggest jobs done in Milwaukee in recent years. James McHugh Construction Co., Chicago, Ill., uses Symons forms for the 131,796 square feet of wall in the $10 million building.

N. J. Turnpike to Test New Fog-Dispersing Unit

A motor-driven propeller which mounts a high shaft and pushes clear air downward to the ground is the essence of a new device set to be tested on the New Jersey Turnpike to dissipate ground fog. Four test installations on the pike will determine the unit's effectiveness in combating the fog and smoke problems which have long plagued the road.

Called the Weathermaster, the device is manufactured by Diesel Power, Inc., Bessemer Place, Pittsburgh, Pa. At the lower section of the shaft, a conical deflector diffuses air blasts over the surrounding area. The unit was originally developed to prevent frost damage in orange groves.

Tests of the device will represent the latest effort on the part of the Turnpike Authority to provide maximum safety to motorists using the road. Previously, several kinds of lights and flares were tested on the road, additional lighting was installed in especially foggy sections, and a standing procedure of operations developed for the state police during fog conditions.

Data on Steel Chain

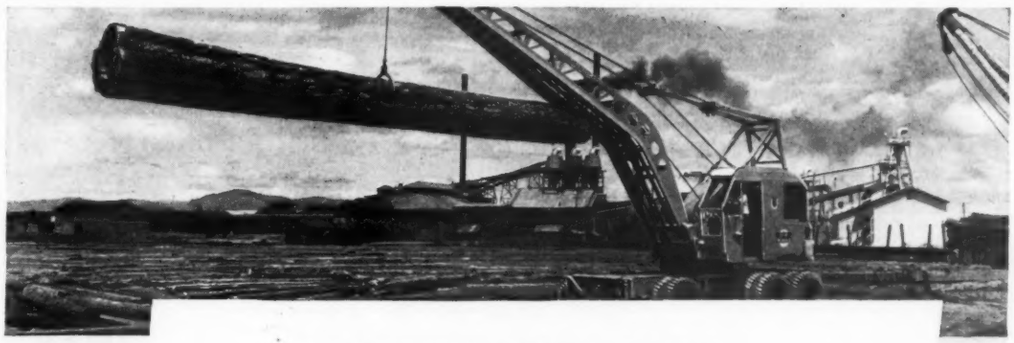
■ A new bulletin has data on steel chain used for load binding and tie-down, towing, hoisting, and on tail gates. It also includes specifications and working-load limits for alloy-steel chain especially manufactured for lifting purposes.

To obtain this literature write to Joseph T. Ryerson & Son, Inc., P. O. Box 8000-A, Chicago 80, Ill., or use the Request Card at page 18. Circle No. 492.

New Armco Plant Operates

Production of corrugated metal pipe already is under way at the new Jefferson City, Mo., plant of Armco Drainage & Metal Products, Inc., Middletown, Ohio. The new plant is fabricating metal drainage pipe, elliptically-shaped pipe arch for use where headroom is low, and special fittings to adapt pipe and pipe arch to a wide variety of drainage conditions.

Stocks of other Armco Drainage products will also be kept on hand.



In heavy logging service

80,000 truck miles without removing engine head with SHELL ROTELLA OIL

LIKE MANY OPERATORS of heavy duty gasoline and diesel engines Deer Park Pine Industry, Inc., Deer Park, Washington, has found it *pays* to use Shell Rotella Oil:

- One of the company's trucks has gone 80,000 logging miles using Shell Rotella Oil and the engine head has never been removed.
- One D-7 Caterpillar was torn down for the first time after 9,000 hours of operation . . . cylinder walls showed only the slightest taper. Because of this, the oil change period has been extended from 40 hours to 80 hours.
- One P. & H. loader has run for *ten years* with only two major overhauls.

Here are the reasons Shell Rotella Oil has been adopted as the crankcase lubricant by hundreds of heavy duty equipment operators from coast to coast.

1. Superior anti-wear protection
2. Highest oxidation stability
3. Excellent detergent-dispersant action
4. Protection against bearing corrosion
5. Maximum engine service life
6. Greatest over-all economy

Send for the latest technical information on Shell Rotella Oil. See how Shell Rotella Oil gives outstanding, low cost lubrication.

SHELL OIL COMPANY

50 West 50th Street, New York 20, N.Y. • 100 Bush Street, San Francisco 6, Calif.

SHELL

Newest addition to the line of Adams motor graders is the 75-hp Model 330.

New 75-Hp Motor Grader Has 12-Foot Blade

■ A new Adams motor grader powered by a 75-hp International diesel engine is announced by the J. D. Adams Mfg. Co., P. O. Box 853, Indianapolis, Ind. It has a 12-foot blade and weighs 20,500 pounds or more depending upon the equipment it carries.

The Model 330 is the latest of several new and improved models, including the Model 660 with a 140-hp engine; the Model 550 with a 115-hp engine, and the Model 440 with an 85-hp engine.

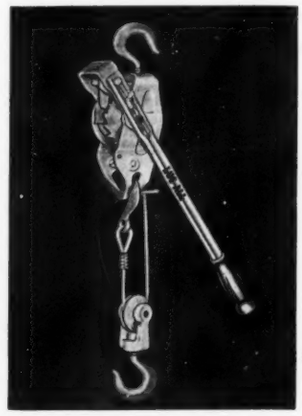
All models feature a fully constant-mesh transmission with helical gears mounted on roller bearings for quietness, long life, and easy shifting; 8 forward speeds up to 25 mph; 4 reverse speeds up to 13 mph; optional "creeper" gears for speeds from ¼ to 1¾ mph; and rubber-mounted engines. The graders have a dual braking system by which the service brake applies hydraulic pressure to a transmission brake as well as to the wheel brakes.

A wide variety of optional equipment is available, including a power-shifted moldboard, a bulldozer, scarifier, and snow-removal equipment. An elevating grader attachment is available for the larger machines.

For further information write to the company, or use the Request Card at page 18. Circle No. 351.

Portable Winch-Hoist In Improved Model

■ The hand-operated Lug-All winch-hoist has now been equipped with a more rugged main frame that permits the use of this unit for many more applications than ever before, according to a report from the Lug-All Co., 331 E. Lancaster Ave., Wynnewood, Pa. The ratchet teeth are now protected from rough surfaces by the new frame, which is a distinct advantage when working under certain conditions, such as alongside steel wire or walls.



The Lug-All winch hoist handles up to 1½ tons.

The new Lug-All weighs 9 pounds; yet it can handle up to 1½ tons. It is equipped with a reversible safety handle that will bend when extreme overloads are applied. Loads can be backed off easily and safely due to an interlocking pawl arrangement.

For further information write to the company, or use the Request Card at page 18. Circle No. 364.

Concrete Form Accessories

■ A line of concrete form accessories is illustrated in a booklet from the Concrete Forms Corp., 314 Hooker Road, Chattanooga 9, Tenn. The literature shows working details of the Bull Winch column clamp, which binds with a 1¼-inch band and can also be used as a 4,000-pound winch, a tightener for wire lines, and a wall form-tie clamp. Drawings also show the application of a wale bracket and a turnbuckle aligning device on concrete forms.

Other accessories illustrated are a shore clamp, a metal T-head, screw jacks, a beam bottom bracket, and a stair-riser bracket.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 422.

Rear-Dump Trailer

■ A new folder shows the operation of the Athey PR21 rear-dump trailer, how it is built, and how it can make money on material-moving contracts. Specifications on the 22.5-cubic-yard unit and on its 275-hp Cat DW21 teammate are given.

To obtain Form No. PR-1014 write to Athey Products Corp., 5631 W. 65th St., Chicago 38, Ill., or use the Request Card at page 18. Circle No. 416.

Motorists: here's proof...

Gulf's cleaner-burning, super-refined gasoline solves today's No. 1 engine problem!

This lamp is burning the "DIRTY-BURNING TAIL-END" of gasoline which GULF refines out
This lamp is burning NEW SUPER-REFINED GULF NO-NOX, the cleaner-burning super-fuel

Laboratory tests promised...

. . . these *immediate* and *lasting* benefits from this new, super-refined fuel:

More complete engine protection than from the so-called "miracle-additive" gasolines. Why? Because Gulf refines *out* the "dirty-burning tail-end" of gasoline (the No. 1 troublemaker in high-compression engines)—and then treats this new Super-Refined NO-NOX to give it a *complete range of protective properties*. It protects *every* part it touches against carbon, rust, gum.

Extra gas mileage in all your everyday, short-trip, stop-and-go driving.

No knock, no pre-ignition. Why? Because the anti-knock power of new Gulf NO-NOX has been stepped up to an all-time high.

Stall-proof smoothness. Instant *starts*, too—and fast, fuel-saving warm-up.

That's why new Super-Refined Gulf NO-NOX gives your engine more power-with-protection than you've ever known.

Road tests proved...

These cars, powered by New Gulf No-Nox, actually performed better than new... after 15,000 miles!

True! After 15,000 miles per car—covering all conditions of city and country driving—Gulf test cars showed these results:

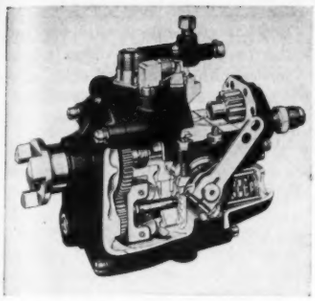
- Higher-than-new horsepower!
- Better-than-new on gasoline mileage!
- And not a single trace of carbon knock or pre-ignition at any time—even on the steepest mountain grades!

GULF

COMPLETELY NEW! SUPER-REFINED

New Gulf No-Nox

THE HIGH-EFFICIENCY GASOLINE



A cutaway view of the fuel pump for the New Cummins PT diesel-fuel system.

New System Simplifies Diesel-Fuel Injection

■ A simplified diesel-fuel system, designed to make diesel-fuel injection as simple as gasoline-engine carburetion and ignition systems, is announced by Cummins Engine Co., Inc., Fifth St., Columbus, Ind. The Cummins PT fuel injection system eliminates fuel-rack adjustments, high and low-pressure check valves, spring-loaded needle valves, helixes, distributor disks, metering pumps, high-pressure fuel lines, and the necessity for timing the fuel pump to the engine.

The new system has a metering orifice as part of the fuel injector located in the cylinder head, so that the injector now serves the dual purpose of metering and injecting the fuel. As a result, the once-complicated fuel pump has become simply a source of fuel pressure.

The injector plungers are operated from lobes on the main engine camshaft and control the timing of the engine, as has been the case in Cummins diesels in the past. However, since the timing is controlled by the engine camshaft, there is the added advantage that the fuel system need not be timed to the engine.

Briefly, the new Cummins PT fuel system operates as follows: A gear pump picks up the fuel from the fuel tank, creating the basic fuel pressure for the system. This pressure is then controlled by a pressure regulator and by a very simple throttle-control valve, a simple governor-control valve, and a shutdown valve.

From this point, the fuel flows from the fuel pump to a common manifold leading to each of the injectors in the engine cylinder head. The pressure from the fuel pump is applied to the metering orifice in the injector cup in the top of the engine combustion chamber. At the proper time for firing, the injector plunger is forced down by the action of a cam on the main engine camshaft, forcing the metered fuel through the spray holes in the injector cup.

Since all injectors are connected to the common manifold, all receive the same pressure. Equal charges of fuel are injected into each of the engine's cylinders, assuring that each cylinder develops equal power without the necessity for individual adjustment of each injector.

This new system is now standard on all models of Cummins diesel engines and can be applied to all Cummins diesels built since 1932, thus permitting older engines to be modernized.

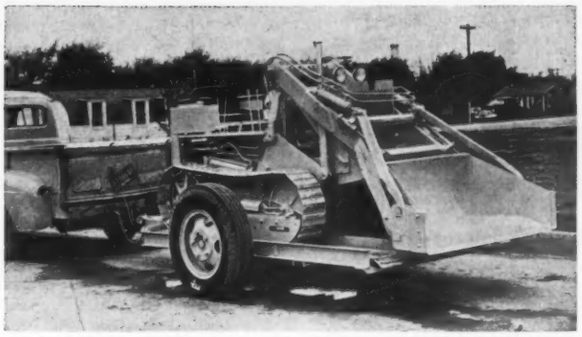
For further information write to the company, or use the Request Card at page 18. Circle No. 489.

Highway Guardrail

■ Details on a highway guardrail made of heavy steel plate in a channel design are given in a folder from the Bethlehem Steel Co., Bethlehem, Pa. The Safety-Beam guardrail comes in standard 12-foot 6-inch sections which, when bolted together on steel posts, form a continuous impact-absorbing beam. It is also furnished in sections up to 50 feet in length.

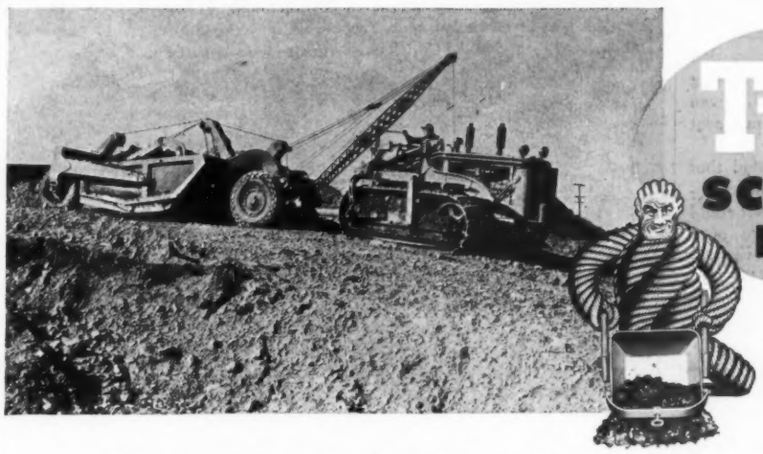
A feature of the guardrail is that it is fastened to a post with one bolt, and no end-anchor rods or complicated adjustments are necessary. The booklet contains plans for assembling and installing the guardrail on highways and bridges.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 467.



THE TERRATRAC TRAILER, developed by the American Tractor Corp., 800 Fort Wayne St., Churubusco, Ind., for hauling a crawler tractor to the job site, is pulled by a pickup truck. One operator can drive the tractor off the trailer, complete the job, reload, and move on to another job without any help. Platform height is only 14 inches from the ground. The trailer is equipped with heavy-duty 10-ply tires, electric brakes, a sturdy drop axle, safety chains, and a ball-type hitch. It is sold only with the purchase of a Terratrac tractor. For further information write to the company, or use the Request Card at page 18. Circle No. 497.

You Move More Yardage Per Foot of



Tuffy
SCRAPER ROPE

You Move More Yardage Per Foot because Tuffy is especially constructed to withstand extraordinary drum crushing abuse. Also it is pre-shaped to take sharper bends over smaller sheaves resulting in longer service life.

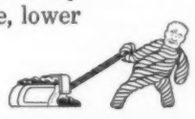
Tuffy's behavior on the drum, on the sheaves and under the shock of load impact on slack line contributes to longer service life. Mount a reel of Tuffy Scraper Rope on your scraper, follow the Tuffy cut-off procedure and you're bound to move far more yardage per foot.

Easy To Order, because no complicated specifications are needed! Just state the length of reel, diameter and "Tuffy Scraper Rope!" When bidding on contracts is close, lower rope costs become an important item.

Tuffy
Dozer Rope
Tuffy stamina plus systematic cut-off procedure from mounted Tuffy reel can treble service life . . . Available in ½" and 9/16" in 150' lengths.

Tuffy
Hoist Line
Designed for hoist line use on all cranes, derricks and clamshells. Tough. Flexible, greater wearability.

Tuffy
Slings
9-part machine-braided wire fabric construction next to impossible to damage by kinking or to strand when a part is cut.



Tuffy
Dragline
Maximum abrasive resistance, extra flexibility! Rides better on grooves, hugs drums when casting!

union Wire Rope corporation
2260 Manchester Ave. • Kansas City 26, Mo.
Specialists in High Carbon Wire, Wire Rope and Braided Wire Fabric

AVOID LEGAL PITFALLS

Alderman's Interest in Municipal Project Bids

THE PROBLEM: *A Wisconsin city alderman was regularly employed as an individual by a contractor. Had this dual relationship continued when a contract for bridge construction was awarded to the company, the contract would have been void under Wisconsin law. But when he learned that his employer would bid on the job, he resigned his employment. This resignation was in good faith and not a mere subterfuge to avoid effect of the law, although the alderman accepted employment by the contractor's son in a business having no relationship to the contract. Did the alderman's participation in award of the bridge contract to his former employer invalidate the contract?*

THE ANSWER: No. (Heffernen v. City of Green Bay, 64 N. W. 2d 216, decided by the Wisconsin Supreme Court.)

The court followed the reasoning of the California District Court of Appeals that the rule that one cannot "faithfully serve two masters representing diverse or inconsistent interests", applies to municipal contracts, and noted that in an earlier case the Wisconsin court had declared to be void a contract awarded to a company in which a participating councilman was interested, even though he resigned his council seat after the contract was let.

In passing, it is to be noted that in at least two cases it has been decided that a municipal contract could be validly let to a relative of a member of the city's governing board. (Lewick v. Glazier, 116 Mich. 493, 501; 74 N. W. 717. Cason v. City of Lebanon, 153 Ind. 567, 55 N. E. 768.)

Injuries to Children On Construction Sites

THE PROBLEM: *A school building was partly completed in Louisville. Children attending a twilight picnic nearby played inside the building after working hours. A 12-year old boy broke a leg as he climbed through a ground-level basement window and slipped in stepping down to the wet dirt floor 2 feet below. Was the construction company liable?*

THE ANSWER: No. (Guelda v. Hays & Nicoulin, Inc., 267 S. W. 2d 935, decided by the Kentucky Court of Appeals.)

The case involved the question whether or not the site constituted an "attractive nuisance", within the meaning of generally recognized law that if one maintains a situation that has a natural tendency to lure children into danger, reasonable steps must be taken to guard against their injury.

The court said that it was not enough that the construction company be aware that children would be apt to trespass into the building, but it must also appear that the particular injury resulted from a condition involving manifest danger to the youthful trespassers. The court did not think that "a muddy basement floor, two feet from the ground level in a partially constructed building" constituted a serious danger to children attracted to the site.

Gifts To Charities On a Cost-Plus Contract

THE PROBLEM: *Where a wartime cost-plus-fixed-fee contract did not specially provide for reimbursement of the contractor for charitable contributions, were contributions to the Red Cross and National War Fund, Inc., reimbursable?*

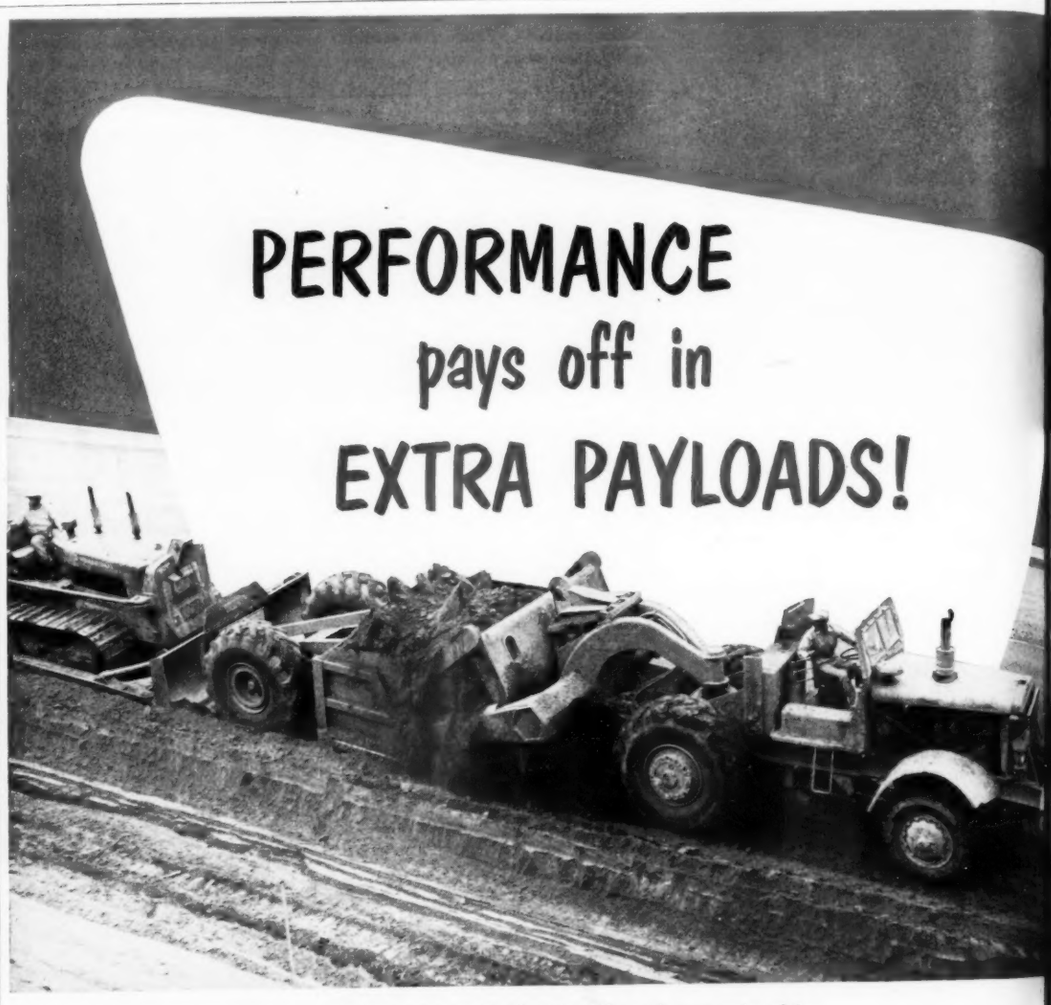
THE ANSWER: No. (Hotpoint Inc. v. United States, 117 Fed. Supp. 572, decided by the United States Court of Claims.)

The court decided that right to such reimbursement was not implied by a contract provision authorizing the contractor to do all things necessary or convenient to operation of the project. A provision allowing for reimbursement for costs of employee-relations plans maintained by the contractor also did not imply the right to reimbursement.

Illegal Demolition

THE PROBLEM: *A city directed a contractor to demolish privately owned buildings, as being unsafe, without securing a sufficient court order as required by statute. (1) Were the city and contractor jointly liable to the owners for the resulting damages? (2) Being actually unaware that the city exceeded its*

PERFORMANCE pays off in EXTRA PAYLOADS!



Picking up a heaped load of about 18 cu. yds. on a section of the Los Angeles Golden State Freeway. Contractor: Kuhn & Murphy.

EUCLID SCRAPERS have proved their high job availability and productive capacity on all kinds and sizes of jobs. They are the fastest growing scraper line in the industry and an important part of the profit picture for many leading contractors ... large and small.

Before you buy any scraper equipment, check with "Euc" owners about actual job performance ... yardage moved per day, and maintenance and operating cost — week by week — not just "paper" figures. You'll find "Euc" Scrapers are real money makers for owners because they get heaped, compacted loads easily, maintain fast travel speeds, dump and spread the load on the run — all adding up to more payloads per hour day after day. Have your Euclid Distributor give you all the facts soon.

EUCLID DIVISION GENERAL MOTORS CORPORATION, Cleveland 17, Ohio

EUCLID THE PIONEER

Euclid Equipment

Edited by A. L. H. STREET
Attorney-at-Law

These brief extracts of court decisions may aid you. Local ordinances or state laws may alter conditions in your community. If in doubt consult your own attorney.

powers, was the contractor entitled to require the city to reimburse him for so much of the damages as he was required to pay?

THE ANSWERS: (1) Yes. (2) Yes. (Paderefsky v. Scala, 129 N. Y. Supp. 2d 661, decided by the New York Supreme Court, Kings County.)

The City of New York was liable because statutes required that certain court proceedings be had before demolition could be ordered. These steps were not taken.

The contractor was liable to the owners because the city could not confer upon him authority to illegally demolish private property. (In short, as against third parties, a contractor is presumed to know whether or not the party with whom he contracts has power to invade the rights of the third parties, even though he does not actually know that the other party is acting without legal authority.

But, as between the city and the contractor, the city was bound to protect him against liability, because he acted innocently and without any reason to suppose that the city was exceeding its powers. (But this does not mean that the contractor could have required the city to reimburse him had he known that the city was acting illegally.)

Power Line Accident

THE PROBLEM: *A highway worker was killed when the cable on a dragline contacted a high-voltage wire on an electric power company's line extending along the side of a road near where culvert tile was being placed in position. The man was standing outside the traveled part of the road. The wire was about 27 feet above the ground and was strung only 2 feet 3 inches within the highway limits. Was the power company liable?*

THE ANSWER: No. (Arkansas Power & Light Co. v. Lum, 262 S. W. 2d 920, decided by the Arkansas Supreme Court.)

The decision was influenced by the fact that the decedent had been working in the place for eight or ten days and the position and location of the power line were clearly apparent.

Hoisting Operations

THE PROBLEM: *Ordinarily, in a damage suit for injuries caused by negligence, the plaintiff must prove in what precise respects the defendant was negligent. An exception to the rule applies where the defendant was in exclusive control of the instrumentality that caused the injury and when the particular accident was of such nature that it would not be expected to occur if due care had been used. In such circumstances negligence may be inferred. A contractor engaged in the erection of a broadcasting tower sublet the mounting of an antenna mast, which fell and was damaged while it was being hoisted to the top of the tower. The prime contractor sued the subcontractor for the resulting loss. Would the exception noted above apply in this case?*

THE ANSWER: Yes, negligence would be presumed. (International Derrick & Equipment Co. v. Bauxbaum, 210 Fed. 2d 384, decided by the United States Court of Appeals, Third Circuit.)

The court said that the opinion of an expert witness, who had mounted similar masts, that the lifting operation had been negligently performed, was supported by an inference that the mast would not have fallen had due care been used.

This does not mean that such an inference of negligence conclusively proves negligence. The presumption may be overcome by defendant proving that he was not negligent. But unless it is overcome, there is sufficient basis for an award of damages to plaintiff.

Bidding Spex on Dam Job Bound the Government

THE PROBLEM: *Bidding specifications covering dam construction required the contractor to furnish needed electric power at the site without expense to the government, but assured that the necessary current would be supplied by a power company. The assurance was given upon a mistaken estimate that only 200 kilowatts would be needed at the site, while actually 1,250 kilowatts were needed. The contractor was not informed that the assurance was based upon the lower estimate. As a consequence, a power line had to be extended to the site at a cost not covered by the bid. Was the government liable for that cost, even though the contract required the contractor to investigate site conditions?*

THE ANSWER: Yes. (Arcole Midwest Corp. v. United States, 113 Fed. Supp. 278, decided by the United States Court of Claims.)

The court said the contractor rea-

Top Performance on the Toughest Jobs... Everywhere!

Dawson-Wade & Co. Ltd. have a tough 22-mile section of the Trans-Canada Highway near Golden, British Columbia. A "Euc" scraper is shown getting a heaped load of approximately 18 cu. yds. from a deep cut on this rough and rugged highway construction job.

One of two "Euc" Scrapers stripping overburden in a Fuller's Earth mine of Floridin Company, Quincy, Florida. This material is hauled 100 to 500 feet to a waste dump, from which it can be returned by the Scrapers to reclaim the land after the Fuller's Earth has been mined.

Amis-San Ore Co. used five "Euc" scrapers, a Loader and fleet of Bottom-Dumps on a 2¼ million yard runway construction and channel relocation job at Lincoln Air Force Base in Nebraska. Here a "Euc" 15.5 yard scraper, working on the channel relocation, is loaded with clay excavation for the 1¼ mile haul.

Four "Eucs" made the dirt fly as they averaged 2.6 minutes per round trip on this Ohio Turnpike job for W. T. Cook Const. Co. Although loading in hard, heavy clay, each "Euc" was heaped and away on the 1000 foot haul in less than a minute.

"Euc" scrapers picked up big loads in a hurry on this 12.9 mile section of the Garden State Parkway near Pleasantville, New Jersey for S. J. Groves & Sons, Minneapolis. "Euc" Loader and Bottom-Dumps were also used on this project.

Levelling a new park at Wellington, Dryden Construction Co. used the first "Euc" Twin-Power Scraper in New Zealand. Round trip haul was only 300 yds. but up-grades on the return trip were as much as 40%. The "Twin" spread loads of 24 cu. yds. in a gully and made the cycle in less than 2 minutes.

Contractor preference — *based on high production and low cost per yard moved* — **has made "Euc" Scrapers the fastest growing line in the field**

sonably assumed adequate current would be available at the site. The case was governed by a rule declared by the United States Supreme Court to the effect that "where the government makes positive statements in the specifications or drawings for the guidance of bidders, a contractor has a right to rely on them regardless of contractual provisions requiring the contractor to make investigations".

Truck Accident

THE PROBLEM: *A gravel contractor hired a dump truck and driver from its owner to haul gravel to road sites designated by the state. The owner furnished oil and gas and paid the driver's wages. Was the contractor's insurer liable to third parties for injuries caused by the driver through negligence?*

THE ANSWER: No. (Johnson v. Royal Indemnity Co., 206 Fed. 2d 561, decided by the United States Circuit Court of Appeals, Fifth Circuit.)

Sureties' Liability

THE PROBLEM: *A contractor agreed to give a performance bond but, being unable to secure a surety company bond, proceeded with the work. It was agreed, after some work had been done, that he might give a personal surety bond. Later the contractor absconded. Was the surety released from liability on the ground that there was no consideration for dating his liability back to the commencement of the work?*

THE ANSWER: No. (Pierce v. Wright, 256 Pac. 2d 1049, decided by the California District Court of Appeals, First District.)

The bond being for the owner's benefit, he could waive the delay in executing it, and by signing the bond the surety bound himself.

Underground Water Was Not Expected

THE PROBLEM: *(1) A sewer contractor on a federal project unexpectedly encountered underground water above the bottom of the sewer line. Was the contractor entitled to an equitable adjustment under a contract clause covering "unknown conditions of an unusual nature" which differed greatly from those generally recognized as inherent in work? (2) If not, was the contractor entitled to collect excess costs due to encountering the water, since it appeared that the government not only withheld from the contractor the fact that he might encounter large quantities of water, but in effect stated that the government had given the bidders the best information available?*

THE ANSWERS: (1) No. (2) Yes. (Ragonese v. United States, 120 Federal Supplement 768, decided by the United States Court of Claims.)

Truck Operator Was Not an "Employee"

THE PROBLEM: *Were gravel pit operators liable for injuries to a third party caused by negligent driving of a dump truck by its owner? The driver-owner was hired by the gravel pit operators to haul gravel at so much per yard, but the driver chose his own time for doing it and was subjected to no control by the pit operators beyond a suggestion that headlights on the truck be permitted to burn during daylight due to dusty road conditions. The only deduction made from the money paid the driver for haulage was for workmen's compensation coverage.*

THE ANSWER: No. (Amyx v. Henry & Hall, 69 So. 2d 69, decided by the Louisiana Court of Appeals, Second Circuit.

Excavation Damages Adjacent Property

THE PROBLEM: *Where sewer excavation caused a cave-in that damaged adjacent property on which a building stood, was the contractor liable without regard to whether the excavation was negligently done?*

THE ANSWER: No. (Pappageorge v. Rosa, 212 Fed. 2d 587, decided by the United States Court of Appeals, Second Circuit.)

In this case, which arose in Connecticut, the court followed the generally recognized rule of law that it is the absolute duty of one excavating near a property line to avoid a subsidence of the adjacent land only when it remains in its natural state. If there are buildings on the property, there is a duty to use due care to prevent subsidence.

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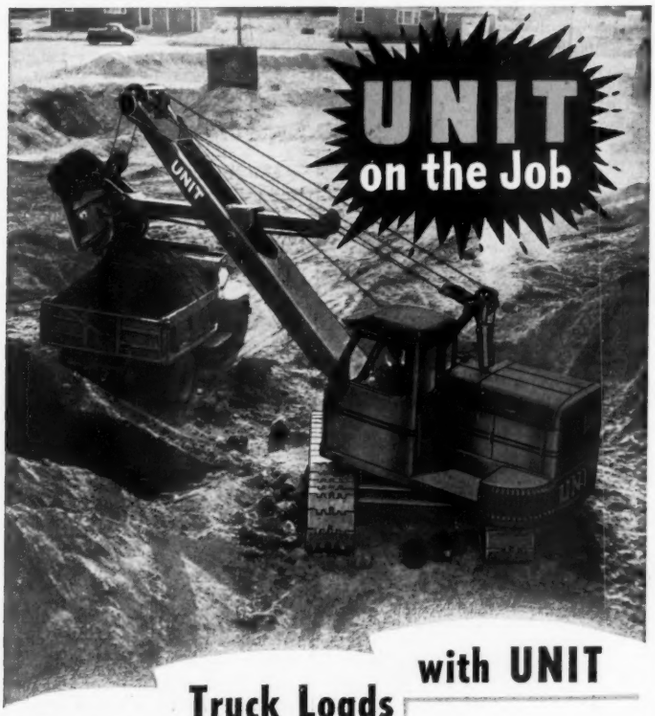

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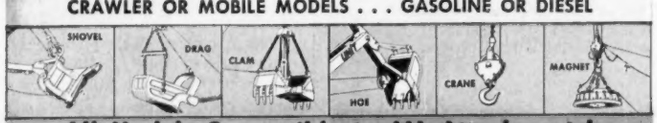

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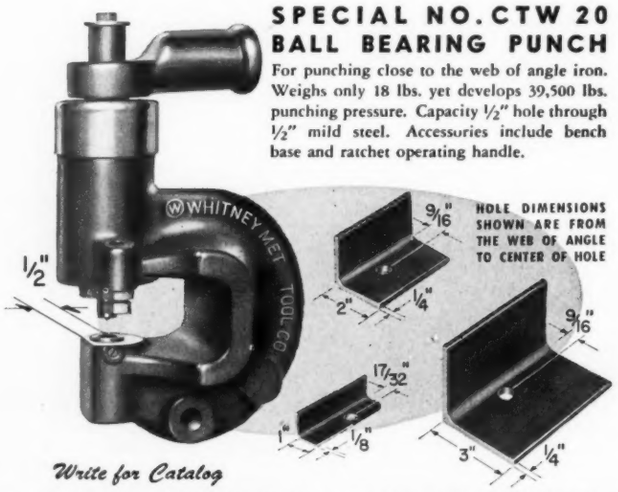
For punching close to the web of angle iron. Weighs only 18 lbs. yet develops 39,500 lbs. punching pressure. Capacity ½" hole through ½" mild steel. Accessories include bench base and ratchet operating handle.



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Shovel-Type Excavator Has 3-Yard Capacity

■ A new 3-cubic-yard shovel, readily convertible to dragline, clamshell, or lifting crane, has been developed by the Bucyrus-Erie Co., Box 56, South Milwaukee, Wis. The Model 71-B fills the gap between Bucyrus-Erie Models 54-B and 88-B, with capacities of 2½ and 4 yards, respectively.

The excavator is powered by a 6-cylinder GM diesel engine equipped with a Torcon torque converter. An air-controlled disk-type power-takeoff clutch connects the engine to its power-takeoff shaft.

The machine is fully air-controlled, with the exception of the drum brakes and swing and propel jaw clutches, either by the use of poppet valves or graduated-pressure valves. An important safety feature is the use of friction steering and digging brakes on the 71-B. Straight travel and gradual or sharp turns are accomplished through two multiple jaw clutches and a pair of steering brakes.

For further information write to the company, or use the Request Card at page 18. Circle No. 360.

Literature on New Asphalt Patching Plant

■ A small 2-wheel-mounted asphalt plant for patching work is illustrated in literature from the Wylie Mfg. Co., Inc., 5926 N. W. 39th, Oklahoma City, Okla. The Model PM-215 Patchmobile described produces hot patches economically by mechanically charging asphalt and aggregate directly into the pugmill.

The literature shows the details of the main components of the unit, which include a pugmill with a capacity of 5 cubic feet per batch, a 165-gallon asphalt kettle, and a 7-foot-long 20-inch-diameter dryer. A volumetric measuring system charges an accurately measured amount of asphalt from the pump into the pugmill. There is no manual handling of material from the charging hopper to the discharge chute.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 398.

New Moon Homes Builds Mobile Field Units

New Moon Homes, Inc., Alma, Mich., best known for the production of trailer homes, is now emphasizing its manufacture of mobile construction field offices and other equipment for contractors.

The mobile units being designed by the company in cooperation with various contractors include both lunch rooms and homes, in addition to field offices.

For further information write to the company, or use the Request Card at page 18. Circle No. 505.

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USE POWER TOOLS—FLOOD LIGHTS

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These plants are the big value for long life and performance.

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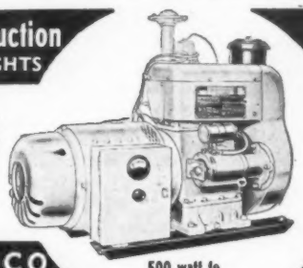

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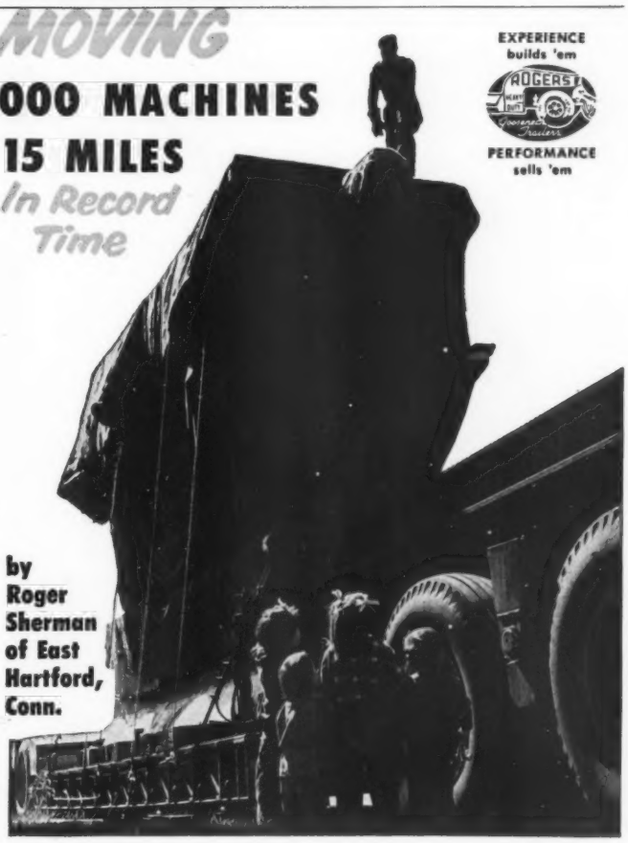

by Roger Sherman of East Hartford, Conn.

Give the expert heavy mover the proper tools and he'll do wonders as in this case. The mover was Roger Sherman of East Hartford, Conn. The tools were Rogers Low Bed Trailers. Records were established in moving 4000 machines 15 miles to the new plant of United Aircrafts Hamilton Standard Division. For example, it was originally estimated that 20 days would be required to dismantle and move a 45 foot plating machine. It was moved intact on a Rogers Trailer in 2½ days. Rogers Trailers *make* money for owners because they *save* money for those who engage them. Get the Rogers Catalog and complete information about the entire line.

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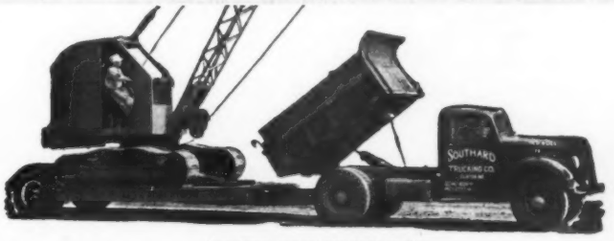

Attaching loaded tilt deck trailer

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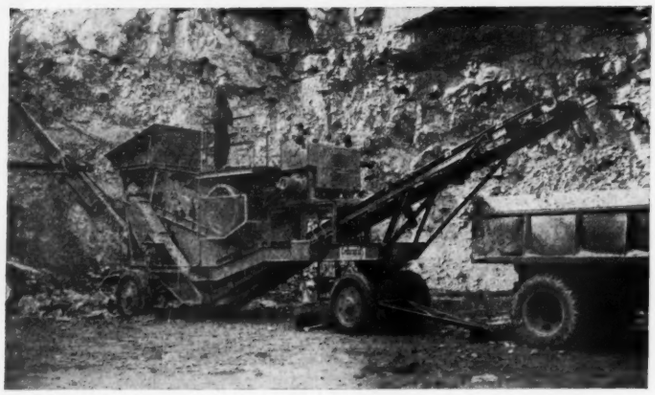
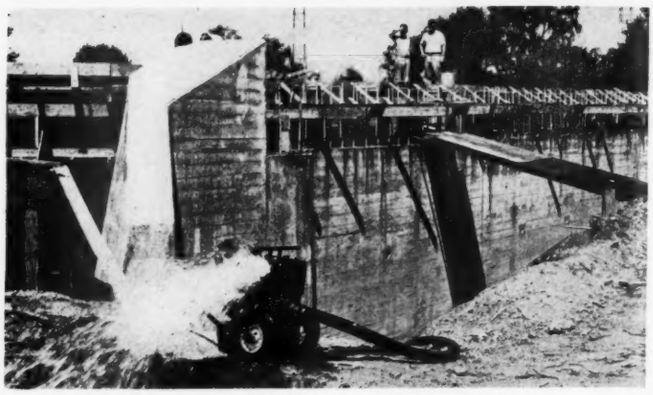


Crushing Plant on Wheels—This new Cedarapids trailer-mounted single-pass portable crushing plant produces two sizes of gravel or rock. Production rating is 40 to 75 tons per hour of 1½-inch material under proper operation conditions. Power source is a 36-hp engine. For details circle 476 on card at page 18 or write to the Iowa Mfg. Co., Cedar Rapids, Iowa.



Dewatering Pump—Performance details have been released for the lightweight Marlow 10M pump. Powered by a Wisconsin 5.7-hp AKN engine, the 214-pound pump will operate continuously for 2¼ hours on a gallon of fuel, and is guaranteed for suction lifts to 25 feet. For details circle 480 on card at page 18 or write to Marlow Pumps, Ridgewood, N. J.

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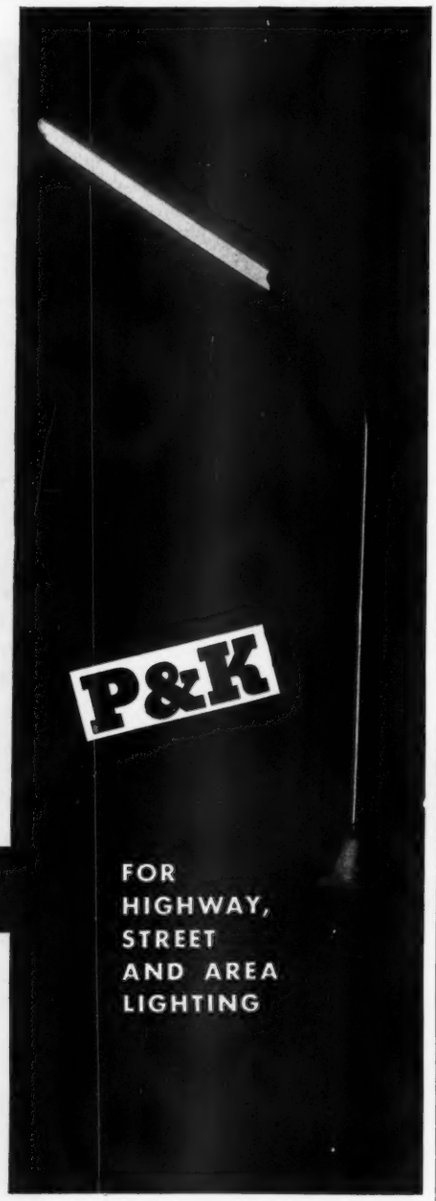
ENGINEERS AND OFFICIALS CONCERNED WITH OUTDOOR LIGHTING ARE INVITED TO WRITE FOR FULL INFORMATION.



Pfaff & Kendall

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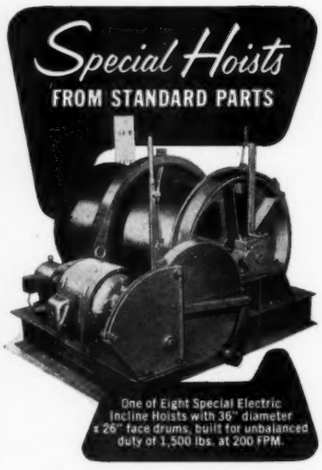
Four-Cylinder Engines

■ A new brochure describes two 4-cylinder gasoline engines made by Willys Motors, Inc., 1015 N. Cove Blvd., Toledo 1, Ohio. Covered are the Power Giant industrial engines: the Model L-4 Jeep and Model F-4 Hurricane. Complete engine details are given both for the L and F-head designs, including power, torque, and fuel curves at various rpm. Data on special features, installation diagrams, etc., are included.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 418.

Harwood Is Sales Manager For Division of Le Roi

James R. Harwood, formerly sales engineer for the Transo Division of the Le Roi Co., Milwaukee, Wis., has been promoted to sales manager. The division, formed over a year ago, manufactures and sells rubber-tired front-end loaders and truck-mounted concrete mixers. The parent organization is the Westinghouse Air Brake Co., Pittsburgh, Pa.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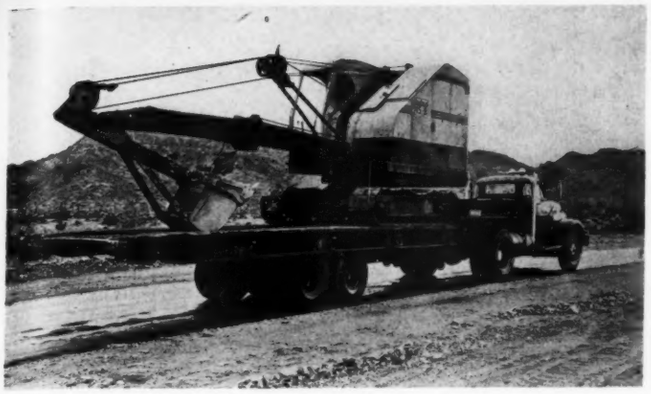

Semi-Dump Platform Hauler—A Fruehauf 25-foot, tilt-deck platform trailer hauls a Bucyrus-Erie Model 15B excavator to the job site. Note that the rear end of the platform is beveled off so as to give firm support at the ground as heavy machinery is loaded or unloaded. For details circle 477 on card at page 18 or write to Fruehauf Trailer Co., 10928 Harper Ave., Detroit 32, Mich.

End-Dump-Wagon—The Sierra Movall, a new cable-operated end-dump rock and dirt wagon for the Caterpillar DW20 and DW21 tractors, has a capacity of 19 cubic yards struck, 25 cubic yards heaped, or 31 tons. The ability to dump from a jack-knifed position and independent air brake controls add to working speed. For details circle 475 on card at page 18 or write to the C&D Mfg. Co., Perkins, Calif.

New Edition of Field Inspection Data Book

The essentials of inspection and supervision of heavy construction work are set forth, together with basic background material, in "Field Practice", a handy reference work published by John Wiley & Sons, Inc. The book, just published in a second edition, is Volume 3 in the series "Data Book for Civil Engineers" written by Elwyn E. Seelye.

Extensively revised and enlarged, the work seeks to furnish the field engineer or inspector with the data he needs in the field, where other references are unavailable.

New features include sections on practical methods of field erection, common types of cracks and defects in brick masonry, corrosion of metals, surveying, and soil mechanics. Many tables, diagrams other illustrations, and sample inspection reports are included with volume.

"Field Practice" is priced at $7.50, and may be ordered from John Wiley & Sons, Inc., 440 4th Ave., New York 16, N. Y.

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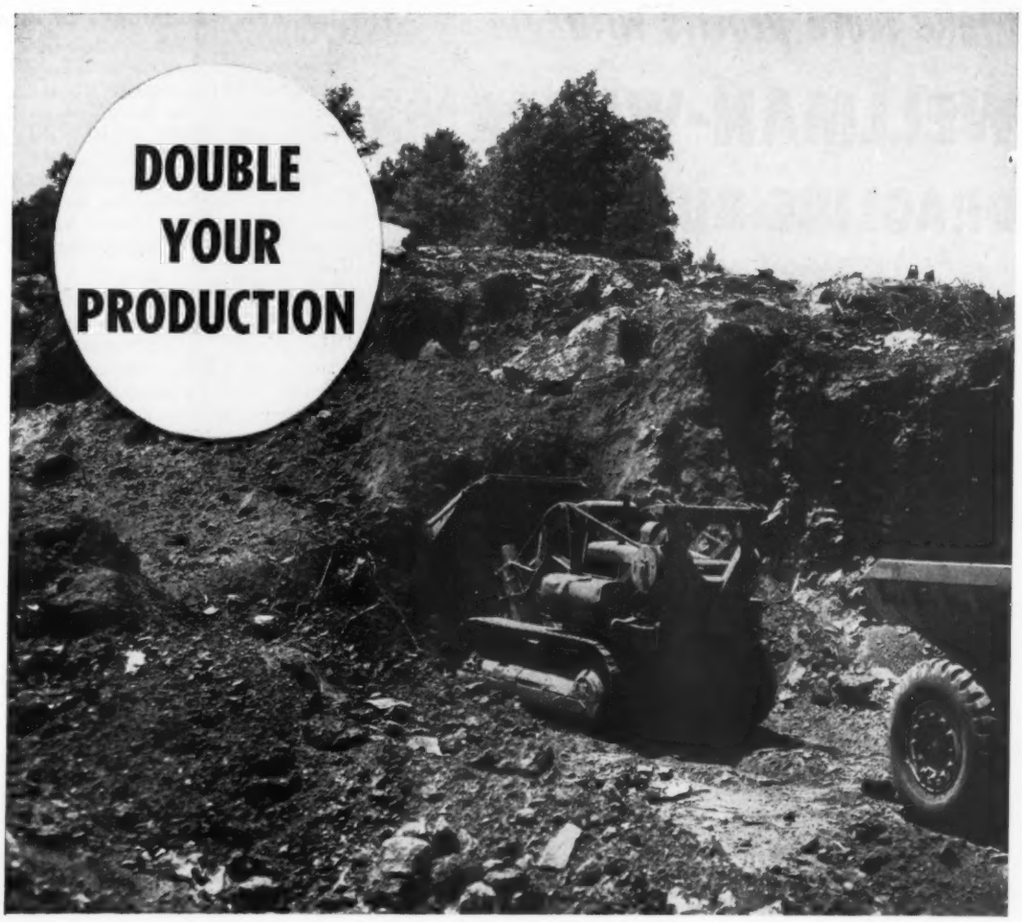

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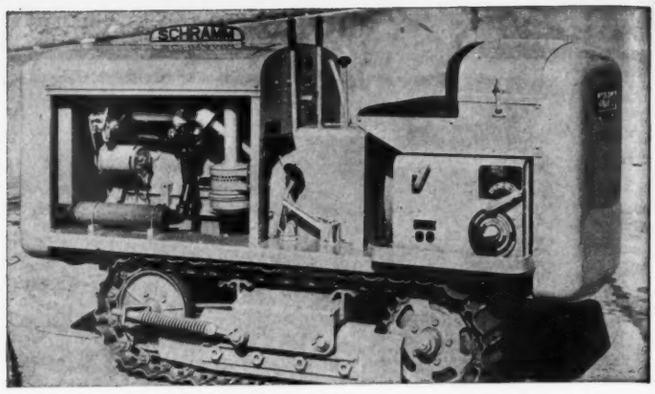
Winterized Loaders—An all-weather molded-steel cab is now available for all models of the Michigan tractor shovels. Designed for easy field installation the cab has all-around and overhead vision through safety glass windows set in rubber molding. The movable rear section has sliding windows. For details circle 473 on card at page 18 or write to Clark Equipment Co., Benton Harbor, Mich.



Welder on Tracks—A self-propelled welder that can go anywhere is this new Schramm 300-amp gasoline-engine-driven unit mounted on a crawler tractor. Steering by brakes on the drive wheels, the 32-inch-wide machine has the ability to turn on its own center. Four forward and one reverse speeds are provided. For details circle 474 on card at page 18 or write to Schramm, Inc., West Chester, Pa.

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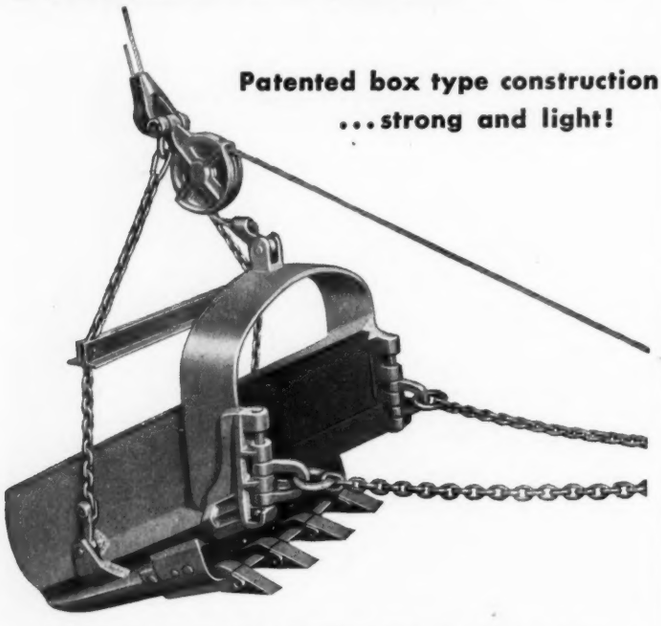

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It's a WELLMAN—built to dig and last while digging.

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The Basic Advantages of Automatic Lubrication

■ The Alemite division of Stewart-Warner Corp. shows the advantages of centralized lubrication in a booklet cartooning the misadventures encountered with old-fashioned lubrication practices.

After showing the disadvantages of manual lubrication, the booklet tells how the use of Alemite Accumeter measuring fittings—connected by tubing to a lubrication pump controlled by an automatic timer—eliminates the downtime, safety hazards, bearing failures, and waste of manual lubrication.

To obtain this literature write to the Alemite Industrial Dept., 1826 Diversey Parkway, Chicago 14, Ill., or use the Request Card at page 18. Circle No. 493.

Up-To-Date Reference Book on Aluminum Data

The 1954 edition of "The Aluminum Data Book", a 220-page reference work dealing with the properties and characteristics of aluminum, now is available from the Reynolds Metal Co., Louisville, Ky. The book discusses the design and manufacture of aluminum alloys.

Forty-three different aluminum mill products are defined and their manufacture described. The section on fabrication discusses blanking, forming, drawing, spinning, machining, forging, welding, brazing, soldering, riveting, and surface finishing.

New information found in the 1954 edition includes the radioactive isotopes of aluminum, thermal neutron absorption cross sections for various metals, and the elements found in commercial aluminum alloys.

"The Aluminum Data Book" was prepared by B. E. Brennan and J. H. Pyles, and edited by G. W. Birdsall. It is priced at $1, but will be sent without charge to engineers, designers, technical men, instructors, or executives who write on company letterhead requesting a copy. Address requests to Reynolds Metal Co., Desk PR, 2500 S. 3rd St., Louisville 1, Ky.

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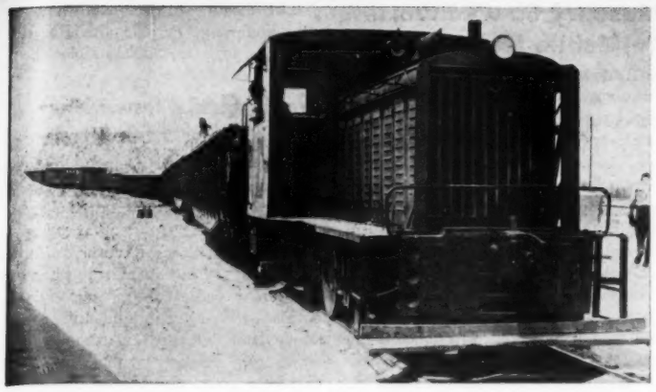
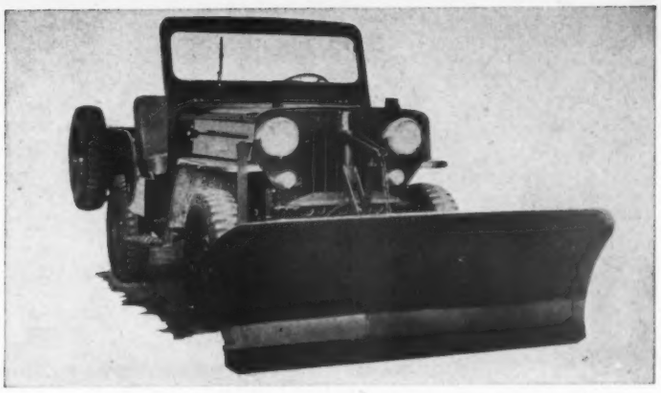


Old-Timer Rejuvenated—Working since 1929, this old gasoline-powered Plymouth locomotive was due for some drastic surgery. Under her restyled cab and hood, there is a new Diesel-Torqomotive Repower unit for more power. For details on Plymouth locomotives circle 478 on card at page 18 or write to the Fate-Root-Heath Co., Plymouth, Ohio.



Snow Plows for Jeeps—Both straight-blade and V-type Blackhawk snowplows are now available for Willys Jeeps and trucks. All of these reinforced units have mushroom-type skid shovels to prevent damage to sidewalks or roads. Plowing widths are 72 or 96 inches for straight blades and 60 or 72 inches for the V-plows. For details circle 479 on card at page 18 or write to Arps Corp., New Holstein, Wis.

Portable Asphalt Plant Features Erection Speed

■ A Bulletin No. 541 introduces the new Standard portable batch-type asphalt plant. One of the main features of the plant is speed of erection. According to the literature, a "self-lift" erecting device permits the entire mixing cage to be raised in less than 30 minutes. The entire plant can be made ready for operation in about one day.

The folder covers all features of the plant, including gradation and weight control, and stresses the unit's portability and its capacity of 40 to 50 tons per hour.

To obtain this literature write to the Standard Steel Corp., 5001 S. Boyle Ave., Los Angeles 58, Calif., or use the Request Card at page 18. Circle No. 386.

All-Weather Lubricants For Outdoor Machinery

■ Lubricants designed for construction machinery and reported to be resistant to heat, freezing cold, rain, sleet, and grit are described in a folder from Gredag, Inc., Box 898, Niagara Falls, N. Y. The literature contains recommendations for greases to be used on a variety of equipment.

Included are lubricants for cables and conveying chains, open and enclosed gears, bearings, wheel bearings, and track rollers. High-temperature greases for cranes and shovels are also listed.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 449.

National Sand & Gravel Makes Board Appointment

Ralph B. Utt has been named to the board of directors of the Manufacturers Division of the National Sand and Gravel Association, Washington, D. C., to fill the unexpired term of Robert Hernlund. The appointment was made after Mr. Hernlund, elected to the board earlier in the year, was given a leave of absence from Western Machinery Co., San Francisco, Calif. For the next two years, Mr. Hernlund, sales promotion manager of the company's Wemco Division, will be in the Philippine Islands. Mr. Utt is general manager of the Wemco Division.

No costly re-coating between pourings

Forms strip easily

Eliminates costly rubbing of oil stain and grain marks

Leaves concrete clean, smooth . . . ready for decorating

Not an oil . . . eliminates slip hazards

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This new masonry saw from Construction Machinery Sales Co. of Waterloo, Iowa, converts to a slab cutter when used with a wheel-mounted track frame.►

Masonry Saw Converts To Mobile Slab Cutter

■ A new masonry saw that easily converts to a slab cutter has been announced by Construction Machinery Sales Co., 447 Vinton St., Waterloo, Iowa. A longitudinal track, which may be quickly attached, makes the saw suitable for accurate long cuts. Transverse rollers permit crosscutting with the same cart and track.

A wheel-mounted track frame converts the masonry saw to a concrete slab cutter. This makes it easy to move as cutting progresses or easy to take to a new location. A feature is that dust or spray is thrown away from the operator so he can see what he is doing even when dry cutting. A portable dust collector as accessory equipment is available if desired.

For further information write to the company, or use the Request Card at page 18. Circle No. 408.

Mechanical Stone-Picker Hauls and Dumps Stone

■ A two-wheel tractor-drawn machine that picks up stones mechanically is illustrated in a folder from the Bridgeport Implement Works, Inc., 1483 Stratford Ave., Stratford, Conn. The Pixtone machine has an adjustable rake that goes along the surface of the ground. Picking teeth throw the stones against the circular rake and into a stone box to be hauled away and dumped elsewhere. The stones are dumped automatically by tripping a lever near the tractor seat.

The machine is recommended for picking up stones from newly cleared land. It has also been used recently for clearing beach areas of stone.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 429.

Liquid Solder Repairs Cracked Motor Blocks

■ Literature on a liquid solder that repairs cracked motor blocks in trucks and tractors is available from the Warner-Patterson Co., 920 S. Michigan Ave., Chicago 5, Ill. Warner liquid solder, which is said not to clog or injure the vehicle's cooling system, contains minute hair-like fibers that work into the leak in the radiator or motor block. It comes in a 16-ounce can, and cans are packed 12 to a carton.

Other automotive products listed in the folder include a radiator cleaner, a cleaner for automotive cooling systems, and a liquid that prevents rusting of and neutralizes acid conditions in cooling systems.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 443.

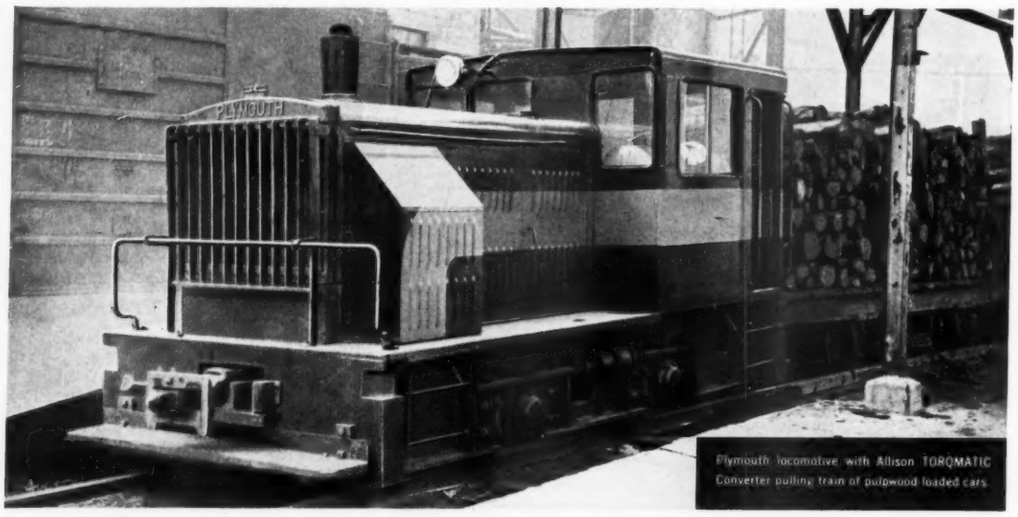
Data on Calcium Chloride For Road Base and Surface

■ A new manual on the use of calcium chloride for the stabilization of road bases and wearing courses is offered by the Calcium Chloride Institute, 909 Ring Bldg., Washington 6, D. C. The information contained in the manual is presented as a guide for both design and construction engineers, and it deals with the properties and design, types and methods of construction, and specifications of calcium chloride roads.

To obtain this literature write to the company, or use the Request Card that is bound in at page 18. Circle No. 341.

Air Placement Equipment Appoints Field Engineer

William F. Rutherford has been appointed the eastern field engineer for Air Placement Equipment Co., Kansas City, Mo. He will direct sales and service for Bondactor concrete gunning equipment and Mix-Elevator. From his headquarters at 111 E. Jerald St., Highland Springs, Va., Rutherford will serve all the eastern states, and will be available for consultation on concrete, refractory, insulation, and other air placement application problems.



Plymouth locomotive with Allison TORQMATIC Converter pulling train of pulpwood loaded cars

Shock-Free Power Transmission Saves $500 a month

PRODUCTION jumped almost 100% when, in December 1950, *one* 18-ton locomotive equipped with an Allison Torque Converter replaced *two* 12-ton trolley-type locomotives owned by West Virginia Pulp and Paper Company.

Immediate savings came to $500 a month – the cost of a locomotive coupler. The trolley-type locomotives damaged an average of one coupler each month but smooth power transmission by the Allison TORQMATIC Converter eliminated this replacement expense.

And by November 1953, *savings in couplers alone* paid for a second Allison TORQMATIC-equipped locomotive.

Maintenance on these two units is "practically nil" because the Allison Converter automatically matches engine power to load demand, prevents engine lugging and drive-line shocks. Each unit uses less than 1 gallon of Diesel fuel an hour, pulls trains up 4½% grades, works an average of 16 hours per day.

Savings on Other Types of Heavy-Duty Equipment

Allison TORQMATIC Converters and TORQMATIC DRIVES cut costs and boost production in a wide range of heavy-duty equipment.

An Arizona mine gets 41% longer tire life on big truck tires costing $1000 or more each.

A Pennsylvania dragline operator saves $2160 a year on cable alone.

A western contractor gets 100% longer transmission life on off-highway trucks.

Get full details on TORQMATIC Converters, DRIVES and BRAKES for your units from your equipment dealer, manufacturer or write direct.

Allison Division of General Motors
Box 894C, Indianapolis 6, Indiana

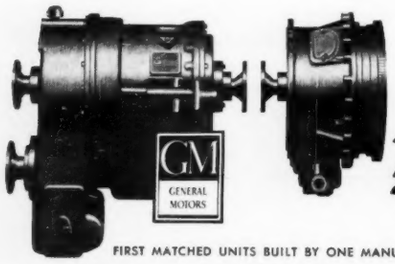
ALLISON TORQMATIC CONVERTER

Simple Design – one-piece cast converter elements – minimum maintenance

Compactness simplifies installation

Designed for power application in the 40 to 400 h.p. range

Longer Equipment Life– absorbs shock, eliminates engine lugging, cuts maintenance cost.



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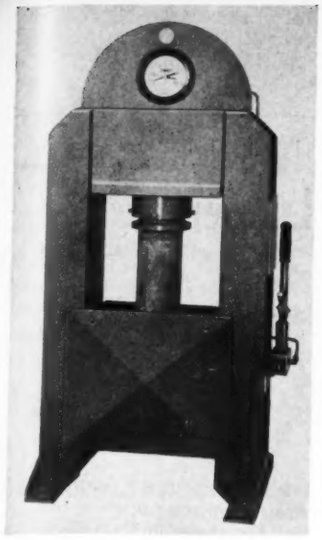
TRUCKS • TRACTORS • SCRAPERS • SHOVELS • DRILLING RIGS



The Forney Model QC-100 concrete compression tester.

Concrete Cylinder Compression Tester

■ A machine for testing standard 6 x 12-inch cylindrical concrete specimens is made by Forney's, Inc., 209 Elm St., New Castle, Pa. A total ram pressure of 125 tons gives the compression tester more than enough capacity to test the hardest specimens to complete destruction.

The ram is 8 inches in diameter. The lower platen can be removed by lifting it off, and the upper platen is cylindrical and is freely mounted on a spherical seat. The Bourden tube-pressure gage has a dual scale dial which reads in platen-pressure tons, and direct in psi. No conversion tables are necessary.

Though weighing 1,000 pounds, the Model QC-100 is portable and can be taken out on the job if necessary.

For further information write to the company, or use the Request Card at page 18. Circle No. 365.

Corrugated Suction Hose Recovers After Crushing

■ A cord-inserted suction hose that recovers its original shape after being run over or crushed is described in a leaflet from the Hamilton Rubber Mfg. Corp., Meade and Prince Sts., Trenton 3, N. J. A wear and weather-resistant red corrugated cover, together with plies of heavy cotton duck, make up the smooth-bore suction hose.

Inner diameters listed range from 1 to 3 inches.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 380.

Tools for Paving Breakers And Rock-Drill Equipment

■ Paving-breaker, rock-drilling, and digging tools are cataloged in a folder from the Bicknell Mfg. Co., 12 Lime St., Rockland, Maine. The literature contains specifications and drawings of a wide variety of tools.

Included are digging chisels, moil points, chisel bits, asphalt cutters, chisels or gads, and solid and hollow drill steels. Clay spades, dirt tampers, etc., are also covered.

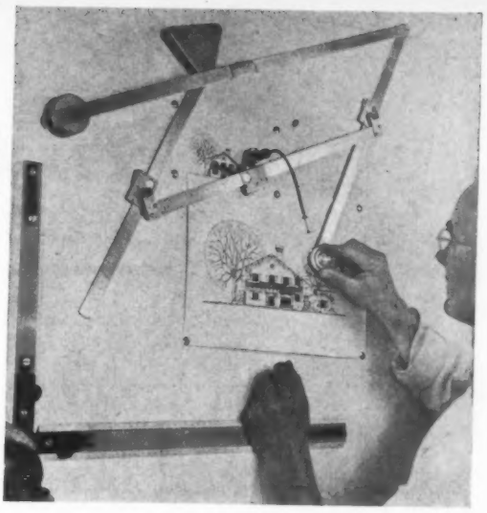
To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 458.

Precision Pantograph Reproduces Drawings

■ A new precision pantograph for reproducing drawings accurately to an equal reduced or increased scale is available from the Geo-Optic Co., Inc., 170 Broadway, New York 38, N. Y. The Model 500 pantograph is reported to have an accuracy of reproduction of plus or minus 1.15 mm in all ratios. The length of each of the four bars of the parallelogram is 19.7 inches, with the bars marked off in millimeter divisions.

A design advantage of the new model is that the pole may be inside or outside of the parallelogram. Also the range of vision of the tracing lenses has been increased.

For further information write to the company, or use the Request Card at page 18. Circle No. 438.



The Model 500 pantograph reproduces drawings to an accuracy of plus or minus 1.15 mm.

Advertisement

New Publications Available On Shovel-Cranes

The publications listed below are available free on your request. Write to manufacturer giving title and job classification.

TL-10 Truck Crane Job Picture Book—Full page illustrations and job data on Lorain 6-ton turntable for mounting on your truck chassis in the field.

TL-15 "Series" Catalog — Complete catalog of the ½ yd. class Lorains—crawler and rubber-tire mountings.

MC-104 Moto-Crane Catalog—Shows construction details and job views of the lowest priced Lorain on Lorain-built rubber-tire carrier. Rated: 6-ton as crane—⅜ yd. as shovel.

TL-25 "Series" Catalog—32 pages on the ¾ yd. Lorain (17½ tons as Moto-Crane). Covers Crawler, Moto-Crane and Self-Propelled mounted machines.

TL "Series" Packaged Component Design—The inside story of the Thew-Lorain TL "Series". Lithographed in full color on transparent plastic. Shows major assemblies of turntable in cut-away views. Pages superimpose on one another to "build" the turntable.

"50" Series Catalog—24 pages, in 2 colors of details and job views of the Lorain crawler-mounted 1-yd machines.

"524" Series Catalog—Describes the companion rubber-tire machines to the "50" Series (30-ton rating as cranes).

"42" Series Catalog—This series available as Moto-Cranes and Self-Propelled only. Rated at 22½ tons as cranes.

"79" Series Catalog—Covers construction details of the 1½ yd. crawler Lorain.

"80" Series Catalog — The 1¾ yd. crawler-mounted Lorain is covered by this catalog.

"820-K" Series Catalog—24 pages, 2 colors. Detailed description and illustrations of the 2-yd. class Lorains. Covers all front ends.

Charge-A-Paver Book — Describes a new front-end that lowers concrete paving costs. Includes operating procedure, pictures and details.

Lorain Hoe Book—The application of Hoes from ⅜ yd. to 2 yds. is graphically covered in 16 pages. Full page job illustrations—operating data.

Tilt-up Construction Book—This book demonstrates in words and pictures the importance of Lorain Cranes to this growing construction technique.

Parts Kits Catalogs — Lorain Parts Kits for replacement and modernization are designed to save Lorain owners money. This 28-page catalog describes and illustrates those available.

Scoop Shovel Book — Completely describes and illustrates the Lorain Scoop Shovel—a front-end attachment for stock-piling, mining and low head-room applications.

All of the above literature is available from The Thew Shovel Co., Lorain, Ohio.

6 WAYS TO PUT MONEY IN YOUR POCKET!

Put a "Lorain-50" on your next job . . . put these 6 features to work making money for you. They are only a few you will get when you put a Lorain-50 to work. They give you a balanced digging cycle, extreme ease of operation, powerful digging and crowding . . . they mean profit on any job you'll tackle. Get the Lorain-50 "Series" money-making story from your nearby Thew-Lorain Distributor today!

THE THEW SHOVEL CO., LORAIN, OHIO

AIR CONTROLS
Air assist controls for hoist, crowd, retract operations. Full air control for 2-way crawler steering and 4-way tread-travel lock.
HYDRAULIC COUPLING
Digging shocks and impacts "melt away". Engine can't stall in any digging. A standard "50" feature, that costs you nothing extra.
LORAIN
CHAIN CROWD
Powerful, positive crowding force transmitted by chain drive. High-speed retract. Power dipper trip — saves fatigue, increases output.
CHOICE OF FOUR CRAWLERS
Don't be penalized by a "misfit" crawler. Choose from standard, long, extra-long and extra-wide crawlers to fit your exact job needs.
CENTER DRIVE
Provides streamlined, direct-to-the-point application of power that concentrates power on any one operation or spreads it in proper balance over simultaneous operations.
ON RUBBER-TIRES, TOO
Advanced, Lorain-50 features are available on rubber-tire machines — 30-ton Moto-Crane, model MC-524; 30-ton Self-Propelled Crane, model SP-524. Five interchangeable front ends.

LORAIN 50 SERIES

THEW LORAIN

OFFERING MORE THAN 136 SHOVEL-CRANE COMBINATIONS ON CRAWLERS OR RUBBER-TIRES . . . TO BEST FIT YOUR JOB FOR PROFIT!

EXCAVATING EQUIPMENT

Tractor Loaders

SHOVEL DOZER attachments consist of a push or lift frame and a bucket which can be raised, lowered, and dumped hydraulically or mechanically. They are usually mounted on wide-model crawler tractors, with special long track frames, an extra truck roller on each side, and heavy-duty idlers.

These machines lift and lower the bucket by means of two-way rams acting against the bottoms of the lift arms, and adjust its cutting angle and dump it by means of another pair which act through levers against the upper part of the bucket.

The bucket has much weaker penetration in proportion to output than a dipper stick because it is larger in relation to the power and weight of the machine, has a wider edge in the digging, and may lack teeth. Another digging difficulty is that the hoist is very slow in proportion to the speed of the tractor, so that the bucket tends to get under more dirt than it can break loose and lift. The effect is of a dipper stick shovel with no retract and with the ratio between crowd and hoist fixed so that the bucket always tends to crowd too deeply into a bank.

When dumping close to the digging point, as in side casting or loading a properly placed truck, keeping up a fast cycle is usually more important than getting maximum loads with each pass. As distance to the dump point increases, capacity loads become more important than the time taken to get them.

If the load must be carried over rough ground or backward up a slope, it should be limited to the weight the machine can carry easily without tipping.

If the ground between digging and dumping is hard and smooth, backing, turning, and dumping can be done at speed with safety. If the ground is rough, the machine must move slowly, since going over a bump or ridge with a heavy load may cause it to fall forward, with the bucket dropping to the ground and the operator being jolted out of his seat. If part of the load dumps, the tractor will settle back. In crossing rough ground, the operator should be alert and prepared to lower or dump the bucket if an upset starts. Lowering has the effect of taking the bucket weight off the tractor long enough to enable it to recover its balance.

If the bucket is carried 2 to 4 feet above the ground, the consequences of overbalancing are not likely to be serious. If it is high, the weight is not quite so far forward, so tipping is less likely; but if it occurs, it will give the operator a worse toss. A high bucket also involves the danger of less likely but far more serious side tipping.

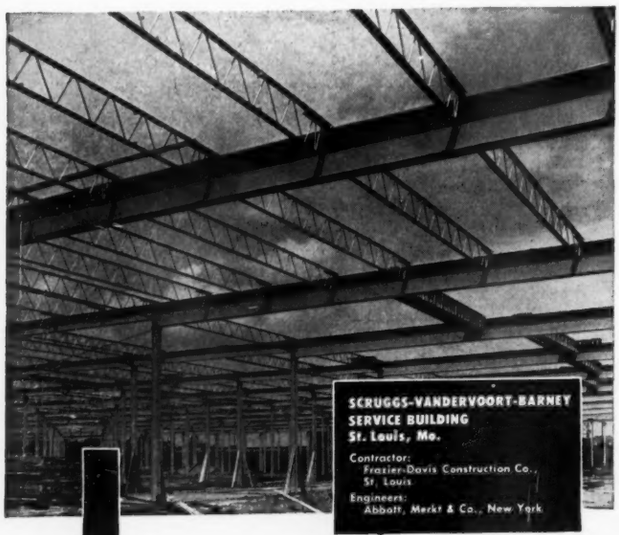
The bucket should not be given a high lift if there are rocks or lumps projecting over the back, as they might fall and injure the operator or the tractor. Normally such things fall to the ground or on the front of the tractor without serious damage, but they might roll down the arms or bounce off the back of the hood.

Loading Methods

There are many possible patterns of digging and dumping, some of which are shown in the accompanying illustration.

The most useful method is shown in figure A, in which the side of the truck is at right angles to the face of the bank. This involves a quarter turn twice in each digging cycle. The turn may be difficult in soft ground, and the tracks are subjected to considerable turning stress.

In B, the truck is parked at an angle of about 45 degrees to the bank, so that the loader's turns are only half as sharp. In this position, some loads can be swung from the bank onto the truck with a very



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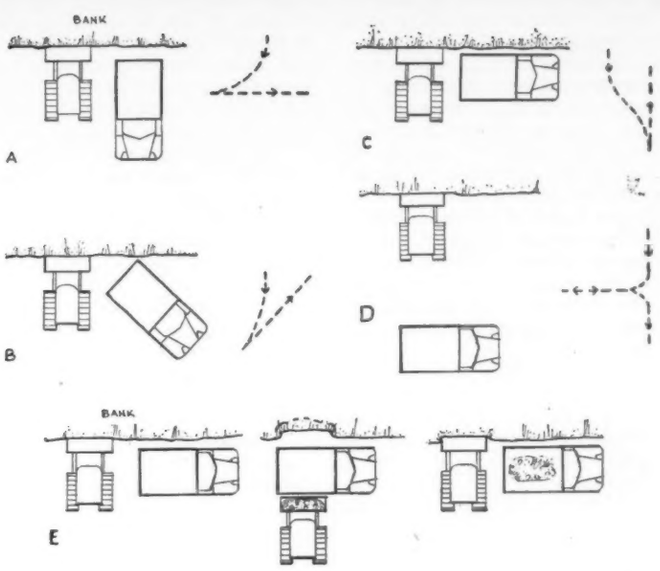
For safety on the job, the working capacity of each block is embossed on the side plates.

This is the fifth in a series of articles made up of excerpts from a new book, "How to Operate Excavation Equipment", by Herbert L. Nichols, Jr., published by North Castle Books, Dept. N, 212 Bedford Road, Greenwich, Conn. Priced at $2.50 for cloth and $3 for de luxe leatherette binding, the book may be obtained from the publisher or through the Book Order Department of CONTRACTORS AND ENGINEERS, 470 4th Ave., New York 16, N.Y.



short backward movement, thus increasing loading speed. This is the best system.

In C, the truck is parked parallel with the bank, and the digging is done just behind the vehicle. This involves about the same amount of turning as B, with a greater amount of walking.

In D, the truck is parallel to the bank but at a distance from it, so that the tractor must make a half turn with each load in order to get it in the truck, and another half turn to get back to the bank. More walking is required than in other methods. This is the slowest and most unsatisfactory of the arrangements suggested, but it is often used in muddy or sandy pits where trucks are restricted to certain drives.

In E, the truck is again parallel to the bank, but it comes to the loader for each bucketful. The machine fills its bucket from the bank and backs straight away. The truck backs in front of it, the tractor advances and dumps into the truck, the truck moves forward, the loader takes another bite, backs up, and waits for the truck to return.

This method involves no turning, is fast and efficient if properly coordinated, and keeps wear on the tractor to a minimum. However, it is disliked by truck drivers and is not particularly recommended for that reason.

The width of the standard yard bucket is about 6¼ feet, and the truck bodies to be filled are usually between 7 and 11 feet long. A short body can be given a full heaped load by dumping in the center only. A long body can be given a good load by dumping alternately in the front and rear from the side, but there is a tendency for the material to pile up in the center and to be skimpy in the corners. If a heavy load is desired, it may be best to load the front of the body from the side, then load the back from the rear.

Clearance under the conventional 1-yard bucket edge in fully dumped position is over 7 feet, but the machine is at its best in loading trucks with sideboard heights of 6 feet or less. At this height, the loader dumps about three feet ahead of the radiator guard, and this makes it possible to slide the load to the far side of the truck if necessary, enabling the operator to see into the body. With increase in lift, the bucket moves back toward the tractor and loses reach, so that a truck with sides 7 feet high would require extra work moving the load across the body or loading from both sides.

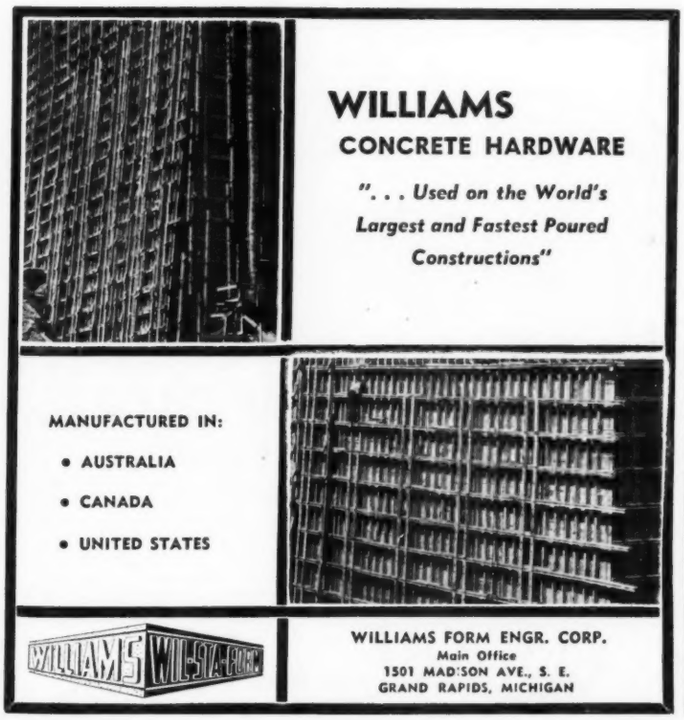
The larger loaders have sufficient bucket width, dumping height, and reach to load the largest bodies readily.

Output

A crawler-mounted front loader with a full-size bucket may be expected to load dirt into properly placed trucks about as rapidly as a dipper shovel with half its bucket capacity. That is, a 1-yard dozer shovel is roughly equivalent to a half-yard shovel in medium digging.

The loader will show a proportionately greater output in softer dirt which heaps on the bucket, provided the pit floor is firm.

The dipper shovel will show a smaller decline in production as the digging becomes harder or coarser, and it is less hampered by rough, rocky, or softpit floors. However, the



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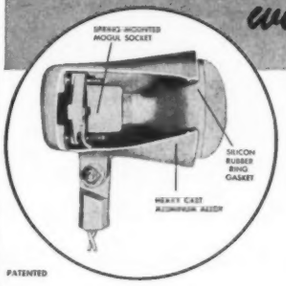

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Franklin & Smith, Inc., 137 Franklin St., Jersey City, N. J., JO 4-2510
Parr Electric Co., 40 Austin St., Newark, N. J., BI 3-2340
Wehle Electric Co., 473 Ellicott St., Buffalo, N. Y., WA 3270
Graybar Electric Co., 21-15 Bridge Plaza, N., Long Island City, N. Y., EX 2-2000
Buckeye Power Sales Co., 1990 E. Main St., Columbus, Ohio, EV 5322
Lloyd E. Holley Co., 1430 Liberty St., Harrisburg, Pa., HA 3-3161
J. B. Supply Co., 3435 Babcock Blvd., Pittsburgh, Pa., PE 4-8033
Capital City Supply Co., Broad & Smith St., Charleston, W. Va., CA 2-2161

Natale Machine & Tool Co. 339 STATE HIGHWAY 17, CARLSTADT, NEW JERSEY

loader will pick up larger rocks without chaining.

The loader can move around more readily, can keep a smooth floor and clean out boulders without assistance, and can be used as a dozer when not needed for loading. Its maintenance cost will be higher because of track and roller wear.

This bucket is not well suited to picking up bulky objects because the floor lacks depth and at ground level it may incline slightly downward. The overhang of the back makes it hard to balance anything big on the floor.

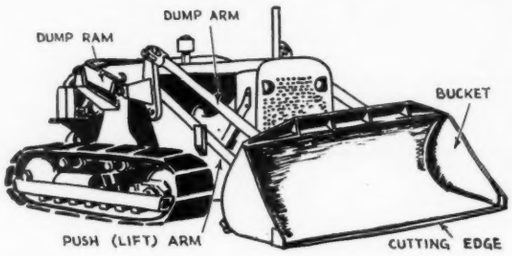
The machine may be used handily as a crane by means of a chain fastened to the back of the bucket and dropped across the edge. Height of the load may be regulated both by the hoist and dump controls.

If the lift is not high enough to put the load on a truck, a small log or a couple of rocks may be placed where the tracks will climb them as the machine approaches the truck. This will cause the tractor to rear up and increase the load height substantially.

The crane attachment for use in place of the bucket has a somewhat higher lift and is more convenient to use than the chain and bucket. But for incidental work, it does not justify its cost or the time required to change over.

The loader may also be used to carry or raise material piled in the bucket by hand. This "motorized wheelbarrow" work may be a profitable sideline when grading around buildings under construction.

A bulldozer blade may be substituted for the bucket. Its use is advisable if the machine is to be used as a pusher for scrapers, or if it is equipped with grousers for heavy digging in rocky soil. The blade is more rugged than the bucket. A wide blade enables the machine to turn in its path without climbing onto the edges of the cut. However, the standard width bucket will do most bulldozing jobs better than a bulldozer, and is immediately available for loading or other special work.



This blade is somewhat more effective than that of a regular bulldozer because the digging angle can be changed with the dump control to meet any change in the digging, and because the blade can be dumped at the top of steep piles, where part of the load has a tendency to ride back down the pile on a standard blade. In addition, it can be floated forward in full dump position as well as backward to smooth over loose soil.

Bulldozing with Bucket

The standard bucket may be used as a bulldozer by cutting with it in a digging position and spreading with it more or less dumped. In the latter position, the bucket floor will have a tilt similar to that of a blade. Its advantages over a blade are the greatly increased cutting efficiency due to the knifelike edge and its ability to push bigger loads of soil, because the pushing load contained in the bucket causes so little load or friction that nearly a full blade load can be pushed ahead of the bucket. In this position, too, the unit does faster grading work, because of its greater transporting capacity and ability to carry dirt to hollows without disturbing surfaces in between. The facility with which material can be backed out of the banks, and the exactness with which it can be deposited where needed, are other advantages.

This machine has a greater effective reach below the tracks than any bulldozer. In the vertical position,

New Technique for Shoring—It Rolls!

The contractor on this job really saved by erecting shoring-units with standard Ezebilt steel-panel Scaffold-for-Shoring, then mounted them on adjustable screwjacks (with casters) like this—

After the first concrete slab was poured, (at 21-ft. height) the entire shore-unit was lowered on the casters, then rolled on to the next bay—with the forms intact! Here were his savings: one rolling rig shored

four slabs, eliminated tearing-down and re-erecting the shoring *three times!* He also saved on lumber and form-work—no re-handling no re-setting of forms. And, his erection cost was way down because his scaffold went "*Up Faster—no bolts to master*", thanks to Ezebilt's Gravity-Lock mechanism.

You can save on any shoring job with Universal 'Scaffold-for-Shoring', then use the same Panels for masonry work. Let us help you on that next job with UNIVERSAL Ezebilt SCAFFOLDING

INDUSTRIAL PROJECT BY MELLON-STUART COMPANY, PITTSBURGH, PA.

Write for complete information—distributors everywhere offer fast service from stock.

UNIVERSAL MANUFACTURING CORP. Zelienople 1, Pa.

Now-up to 1000 pounds EXTRA LEGAL PAYLOAD EVERY TRIP

NEW TWIN HOIST ANTHONY Teleramic HOISTS and BODIES

Extreme forward location and point-of-lift of the Anthony "Teleramic" hoist shifts *all* of the hoist weight 'way up-front—puts more of the permissible load on the front axle—lets you carry far more payload on the rear axles—and the lighter combination weight boosts the legal payload as much as 1000 pounds. Anthony "Teleramic" Hoists are available in models up to 30 tons capacity for all trucks—straight and 6 wheelers. Get the facts today from your Anthony distributor near you or write direct 5416-C.

ANTHONY HYDRAULIC

ANTHONY COMPANY
STREATOR, ILLINOIS

Use the Request Cards Between Pages 18 & 19 To Obtain Further Information or Printed Matter on Any Product Advertised or Described Editorially in This Issue

Use the Request Cards Between Pages 18 & 19 To Obtain Further Information or Printed Matter on Any Product Advertised or Described Editorially in This Issue

the bucket edge will reach more than two feet below the tracks, and it will cut a shear wall to that depth. Because of their wide bases, no dozer blades can be forced straight down or reach such a depth in a short distance, even when capable of such a drop.

The bucket is extremely efficient at backdragging because the floor, when tilted straight down, can penetrate fairly hard material vertically, and the clear space between the bucket and the tracks is sufficient to accommodate a lot of dirt. When backdragging in order to smooth loose dirt, the operator has a choice of tilting it to full dump where it will cut, through intermediate positions where it will not cut and pull decreasing quantities of earth, to flat where it will move hardly any earth. In the flat or near flat positions, down pressure can be applied so that loose dirt may be compacted.

It will be apparent that the operator must use two controls more or less continuously, as against one in a bulldozer, in order to bulldoze with a bucket. Some operators may dislike the machine for this reason.

Wheel Tractor-Loaders

Most wheel tractor-shovels do not have down pressure on the bucket, and there is considerable argument as to whether this feature is desirable. The type of work is the most important factor in deciding. Handling loose materials in yards and warehouses does not require it. Hydraulic dump buckets cut so effectively that they will handle many types of digging without extra weight. Wheel tractors often rear up when the edge hits an obstruction, and this puts the tractor weight on the bucket without use of hydraulic down pressure.

But if the digging is hard enough to resist the edge, and smooth enough not to stop it, the bucket may slide without cutting. With down pressure, it would dig right in. This occurs not only in primary excavation, but in piles which have become compacted or frozen.

Down pressure is needed more frequently with gravity-dump buckets and particularly with bulldozer blades, because of their weaker penetration.

There are no disadvantages to down pressure as long as the machine is built well enough to take extra punishment, and for general work it is apt to add enough to the usefulness of the loader to justify the moderate additional cost.

The standard overhead shovel or loader digs at the front, lifts the bucket, and dumps it to the rear. There are also other types, one of which can dig at either end but dumps only at the front.

These units are intended primarily for loading dirt, gravel, or clay from banks, broken pavement from roads and streets, and for other heavy digging from a relatively flat surface. Under average conditions, they have a larger output than front loaders of similar size, and do not subject the tractor to twisting strains.

They are well suited to excavation in driveways, alleys, or other narrow spaces where side clearance is limited. They require a free working height of about 18 feet for dumping, but can dig wherever there is enough headroom for the roof, and walk to a clear space to hoist and dump.

An overhead is not as versatile as a front-end loader. When equipped with a bucket, it must go through the whole overhead cycle in order to dump. It can therefore grade only by using the filled bucket as a dozer, or by turning in a half circle and backing to dump the load ahead. Sometimes it is possible to keep the cutting sufficiently ahead of the filling to enable the shovel to dig to the front and dump in holes behind it without turning.

(TO BE CONTINUED NEXT MONTH)

Line of Conveyor Belting

■ A booklet on conveyor and elevator belting is available from the Quaker Rubber Corp., Tacony and Comly Sts., Philadelphia 24, Pa. A belt of step-ply construction shown has top plies that do not extend the full width of the belt so that there is a deeper layer of rubber in the center for better troughing and abrasion resistance.

Other types available, in addition to a belt of uniform thickness, include one with a reinforced top, a belt of breaker-strip construction, and one of cord-type construction.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 421.

Line of Hot-Oil Heaters

■ A line of hot-oil heaters is illustrated in a folder from Hy-Way Machinery, Inc., 3697 Oakwood Ave., Youngstown 9, Ohio. The B series Hy-Way heater is a fully automatic system based on a non-pressure type of heat generator in which a suitable oil is heated and circulated through coils, jackets, and radiators. The pump furnished develops 27 to 30 pounds distribution line pressure.

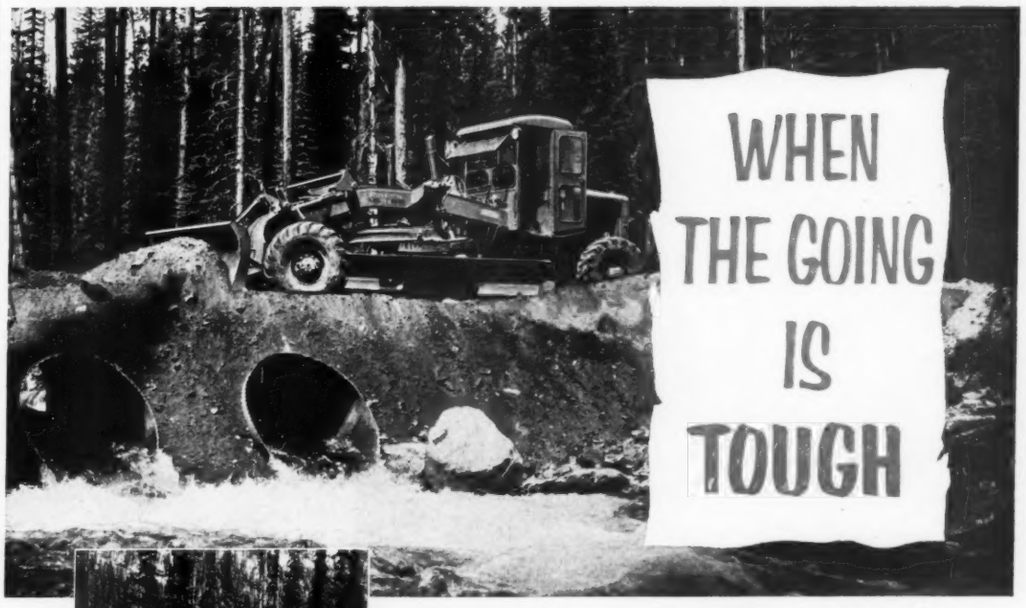
Models listed are rated for 8 to 10, 10 to 15, and 15 to 20 gph fuel oil demand. Heaters can be fitted for burning gas, light oil, and No. 5 or 6 fuel oil.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 388.

Harnischfeger Corp. News

Thomas J. Jeanneret is the new general manager of the P&H Pacific Division of Harnischfeger Corp., Milwaukee, Wis. He succeeds the late Ralph D. Holcomb.

The new manager of plant, service, and repair-parts operations in the Pacific Division is Paul Diefenderfer.



TOUGH! Using Rear Steer to angle the bulldozer blade and spill the material over the side of the fill. Impossible with any other grader-bulldozer.

TOUGHER! Rocks and earth are needed to repair this washout. Traction is ample. Powerful drivers hold front end steady.

TOUGHEST! Clearing boulders from the bed of a rushing mountain stream to open a ford around a bridge.

YOU NEED THE POWER AND TRACTION
OF AUSTIN-WESTERN'S ALL-WHEEL DRIVE

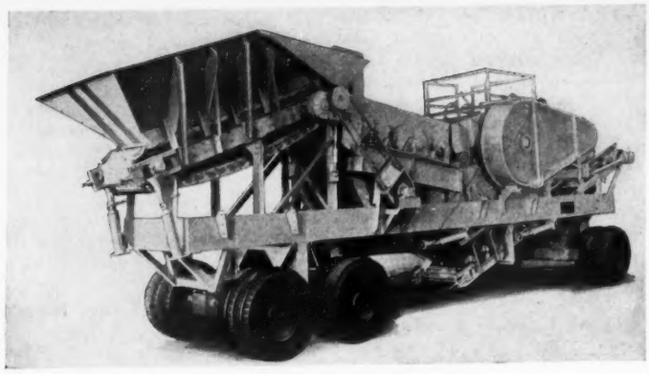
Good going or bad . . . earth, stumps or rocks . . . this fast, hydraulically operated bulldozer can do work far beyond the range of such an attachment on an ordinary motor grader, thanks to the extra power of All-Wheel Drive and super-maneuverability of exclusive All-Wheel Steer. By swinging the rear end of the grader to right or left, the machine can be used as an angledozer.

The bulldozer blade is of welded steel construction, heavily built and reinforced to handle successfully work of the rough-and-tumble variety pictured on this page, and move maximum amounts of material when the going is easier.

There is constant or intermittent need for a bulldozer on many road construction and heavy maintenance operations. On rugged Austin-Western Power Graders, this attachment eliminates the necessity of tying up extra equipment for the occasional job; is an essential on many jobs and a time and money saver on dozens of others.

Austin-Western
Power Graders · Motor Sweepers
Road Rollers · Hydraulic Cranes
Construction Equipment Division

Manufactured by
AUSTIN-WESTERN COMPANY
Subsidiary of Baldwin-Lima-Hamilton Corporation
AURORA, ILLINOIS, U.S.A.



This new portable primary plant by Pioneer features a screening unit set ahead of the jaw crusher.

Crushing Plant Has Screening Unit Ahead Of Primary Jaw Crusher

■ A new portable primary plant for crushed quarry-rock production uses a screen ahead of the primary crusher to by-pass material already down to size.

The new Pioneer Model 150 PRS plant has a 36-inch x 10-foot apron feeder, a 4 x 6-foot 2-deck four-bearing vibrating screen, and a 2036 roller-bearing jaw crusher. It is mounted on a pneumatic-tire chassis, with proper weight distribution to meet state highway axle-load limits.

Material is dumped onto the apron feeder for delivery to the Mesabi-type vibrating screen. This screen, in addition to allowing product size to by-pass the crusher, also rejects quarry dirt. Material retained on the steel-plate top deck is discharged into the jaw crusher; that passing the top deck but retained on the wire-mesh bottom deck goes into the receiving hopper of the 30-inch x 18-foot end-delivery conveyor at the front of the plant.

The fines passing the bottom deck are carried over a plate to either the main delivery conveyor or to the hopper of a 24-inch x 25-foot reject conveyor, which is offered as optional equipment.

For further information write to the Pioneer Engineering Works, Inc., 1515 Central Ave., Minneapolis 13, Minn., or use the Request Card at page 18. Circle No. 483.

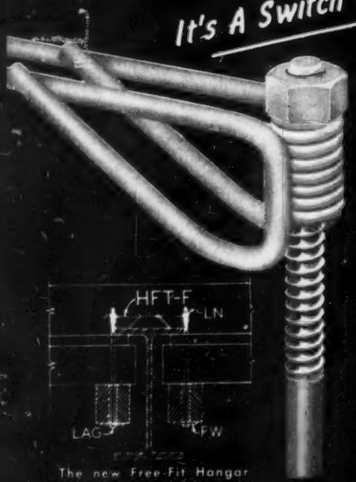
TURN DECK FORM INSTALLATION RIGHT SIDE UP...

with

Richmond's

Free-Fit HANGER FRAME-TYS!

It's A Switch for Safety's Sake!



The new Free-Fit Hangar Frame-Tys is one of the many hanging systems initiated by Richmond. Others include the ty hangar, Flange Hangar Saddles, Fascia Hangars and Wire Beam Saddles.

Working parts Tylags and flat washers are returnable for full credit. No Rentals are Charged.

By turning the deck form hanging process upside down—or more correctly right side up, Richmond makes sure that *all* deck form installation and adjustment is done exclusively from above!

This means workers have only to *bend down*... rather than reach down under precariously. *Richmond's free-fit hangar frame-ty is much faster and efficient, too!*

With the lag nut above, forms are quickly tightened *flush* against the underside of the steel, insuring clean, leakage-free forms.

So, for safety and for speed, switch to *Richmond's new* free-fit hangar frame-tys!

For our complete catalog, see SWEET'S Industrial Construction File 2fRi, Architectural File 2fRi.

MEMBER Producers' Council, Association of General Contractors, Associated Equipment Distributors Reinforcing Steel Institute.

INSIST ON RICHMOND
... AND BE SURE IT'S RICHMOND!

Richmond SCREW ANCHOR CO., INC.

816-838 LIBERTY AVENUE · BROOKLYN 8, N.Y.
315 SOUTH FOURTH ST · ST JOSEPH, MO

Send for new 1954 Catalogue

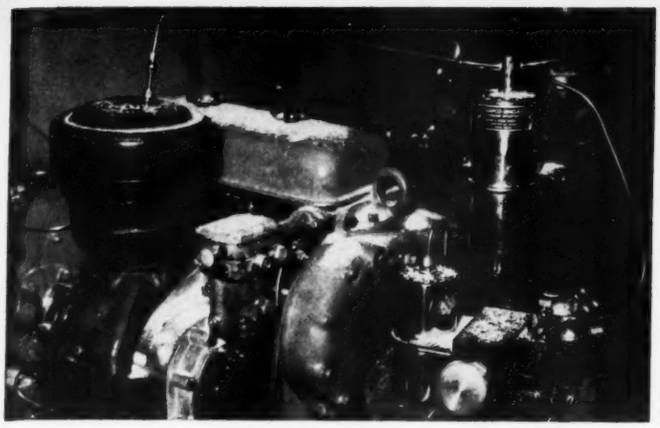
Gurley: the Lightest, Strongest Engineers' Transit

Check these features:
- ○ *As much as 25% lighter than other makes*
- ○ *Made of aluminum alloys, 30% stronger than metals usually used*
- ○ *Integral plate and standards structurally strong, rigid—no screws to loosen*
- ○ *Covered glass reticle: cross and stadia or other patterns on glass*
- ○ *Multi-groove axle and bearing prevent side play; structurally brace upper standards; keep out dust*
- ○ *Agate bearings and leaf-type tangent springs give smoothest possible motion on tangent screws*
- ○ *Reversion telescope level*
- ○ *Most accurately graduated circles of any instrument today*

GURLEY plus VP

Variable Power, now standard on all Gurley transits and levels, permits wide range of magnification with *one* eyepiece. Change your magnification to suit weather and light conditions. Built-in haze filter. *Write for "Facts on VP."*

W. & L. E. Gurley
Fulton & Station Streets, Troy, N. Y.



The Ampco-Sinclair engine starter on this engine meters the correct amount of starting fluid automatically.

Spray-Type Applicator Meters Starting Fluid To Fire Cold Engines

■ A new type of diesel and gasoline engine starting-fluid applicator automatically meters the proper amount of starting fluid to begin normal fuel firing in cold engines. Known as the Ampco-Sinclair engine starter, the new device was developed by Sinclair Research Laboratories, Inc., together with the Automotive & Marine Products Corp. of Boston, and is being manufactured by the latter firm.

In special cold-room tests the new applicator is reported to have induced rapid engine firing at temperatures down to minus 40 degrees F. The device is designed for all diesel and gasoline engines with up to 1,000-cubic-inch displacement.

The starter uses the aerosol spray principle rather than the solid starting fluid injection. It receives a sealed can of starting fluid to eliminate pouring, and is rated to provide up to 60 individual starts with a 10-ounce can of fluid. The starter has been designed for use with Sinclair starting fluid, but other fluids can also be used. With a closed pressurized circuit, the starter works without making fumes and fire hazards. Controls are large enough for manipulation with gloved hands.

It is pointed out that while existing starting-fluid applicators require an experienced operator to insure that the proper amount of fluid is injected into the engine, the Ampco-Sinclair starter makes this unnecessary by metering fluid at the proper rate automatically. Since too much fluid cannot be injected into the engine, harmful detonation is prevented.

For further information write to either Sinclair Refining Co., 600 Fifth Ave., New York, N. Y., or to Automotive Marine & Products Corp., 87 Harvard Ave., Boston 34, Mass. Details may also be obtained by circling No. 506 on the Request Card at page 18.

Electric Rock Drill

■ Its recently announced electric rock drill, powered by a lightweight motor requiring no brushes and operated from a Carryable Homelite generator, is covered in a booklet from Homelite Corp., 22 Riverdale Ave., Port Chester, N. Y.

The Bosch rock drill, equipped with a pressure blower, drills blasting holes, wedge holes, split holes, and anchor holes in rock, concrete, or brickwork. It drills holes 18 feet deep.

The Homelite Corp. has been assigned sole distributor for the Bosch electric tool line which includes, in addition to the drill, a light-duty pavement breaker and a builder's hammer for such tasks as chipping, spading, vibrating, and nail driving.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 385.

Hard-Facing Data

■ A study of hard-facing, its application, and its wear-resisting qualities wherever impact and abrasive conditions exist, is contained in a new pocket-size brochure from the Mir-O-Col Alloy Co., 312 N. Avenue 21, Los Angeles 31, Calif. The booklet also contains new information about Mir-O-Col's line of hard-facing metals.

A special section of the report—the application index—recommends specific hard-facing rods for over a thousand individual pieces of equipment subject to impact and abrasion.

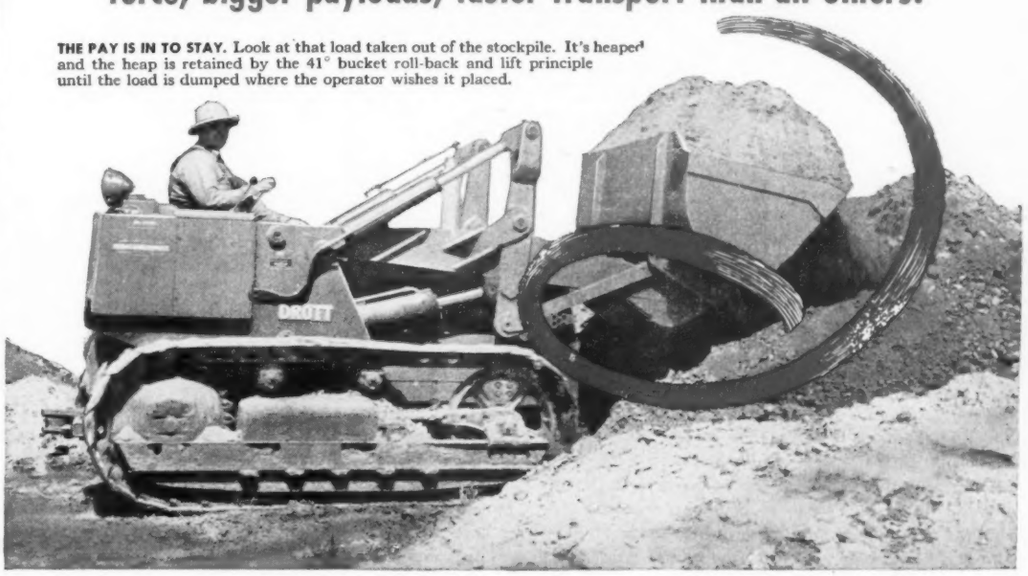
To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 384.

KIESLER
Since 1892
2-LEVER ARM CLAM SHELL BUCKETS with POWER ON BOTH SHELLS
"A PAYLOAD EVERY TRIP"
The ONLY Bucket that DIGS-IN instead of Lifting-Out.
Write for Literature.
JOS. F. KIESLER COMPANY
934 W. HURON ST. CHICAGO 22, ILL.

Get a LOAD of This!

Exclusive Drott Skid Shoes are the big reason why INTERNATIONAL crawlers with Drott Skid Shovels deliver 300% greater digging force, bigger payloads, faster transport than all others!

THE PAY IS IN TO STAY. Look at that load taken out of the stockpile. It's heaped and the heap is retained by the 41° bucket roll-back and lift principle until the load is dumped where the operator wishes it placed.



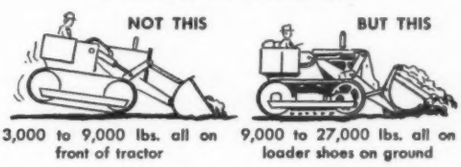
Big news in the front-end loader industry today is the amazing performance of the new leader in loaders—INTERNATIONAL crawler equipped with Drott Skid Shovels.

Drott Skid Loaders have exclusive Skid Shoes that permit use of the ancient lever principle to supply 300% greater break-out force than all other shovels. These same Skid Shoes transmit loading force into the ground and let the units transport heaped loads at ground level in third gear—not first—to speed every loading cycle and eliminate carrying strain.

The Hydro-Spring is still another Drott exclusive—absorbing 70% of the shocks normally encountered in front-end loaders to extend equipment life and make operating far easier.

Skid Shovels come in four sizes—⅞, 1¼, 2 and 3 cu. yd. buckets for the INTERNATIONAL TD-6, TD-9, TD-14A and TD-18A. You can get an eye-opening demonstration of the model suited to your needs by simply calling your INTERNATIONAL Industrial Power Distributor today.

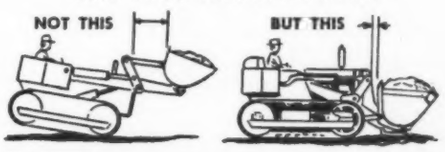
PRY-ACTION BREAK-OUT



3,000 to 9,000 lbs. all on front of tractor

9,000 to 27,000 lbs. all on loader shoes on ground

SKID SHOE TRANSPORTATION



INTERNATIONAL HARVESTER COMPANY, CHICAGO 1, ILLINOIS
DROTT MANUFACTURING CORP., MILWAUKEE 8, WISCONSIN

INTERNATIONAL DROTT

DISTRIBUTOR DOINGS

Improved Parts Facility Aids B-K Dealer Service

WITH THE PRONOUNCED shift to a buyer's market, construction equipment manufacturers today are placing added emphasis on top-notch service to contractors—something difficult to achieve in the hectic years just past. Typifying this move is the improved parts and service department of the Blaw-Knox construction equipment division, located at Springdale, Pa., just a few miles from company plants in the Pittsburgh area.

Now functioning for the first time as a separate and integrated department, the Springdale warehouse is designed mainly as a supplier to B-K dealers. Stocking more than 10,000 different parts in the 16,000-square-foot warehouse and adjoining yards, the department functions smoothly to keep the stock of over 200 distributors in major metropolitan areas at levels which assure prompt customer delivery.

Altogether, the department's inventory approximates a value of a half million dollars, and individual items range in value from a few cents to $1,200. In addition to furnishing individual parts and subassemblies for Blaw-Knox road-building machinery, clamshell buckets, and allied construction equipment, the department is ready to identify and furnish parts not normally stocked by a dealer. Some of these items include parts that have not been manufactured for the past quarter-century. Although principally a behind-the-scene service for contractors, the department steps up to assign priority to customers' emergency orders when necessary.

Operation

The internal operation of the facility is carried on by 25 employees, each specially trained in his job, who work under the supervision of S. M. Pare, manager. Incoming parts are recorded in a central card file which pinpoints the location of every item stocked in the warehouse. A perpetual inventory provides a continuous record of stock on hand to guide department procurement personnel.

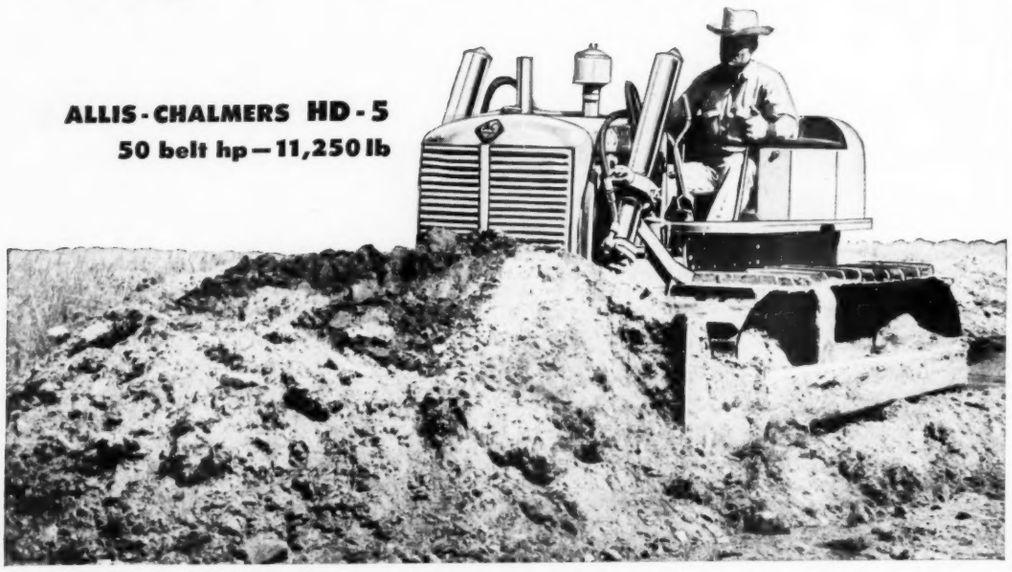
As an order is received and acknowledged, it is recorded in a department file containing the names and previous equipment orders of thousands of customers. Orders shipped directly to the user are always billed through the Blaw-Knox distributor in the customer's area.

In the warehouse, a crew headed by John R. Selleck, foreman, and M. J. Varley, shipping manager, receive, pick, pack and ship the merchandise. The parts vary in size, shape, and weight, and the crew handles everything from a preboxed carton of bolts being shipped by parcel post to constructing crates for unwieldy parts.

Four factory-trained service men work out of the Springdale department, making emergency trips to a customer's job. These men are on

designed with dozing in mind

ALLIS-CHALMERS HD-5
50 belt hp—11,250 lb



In its weight and power class, only the Allis-Chalmers HD-5 crawler gives you a tractor that is new in design and built with bulldozing in mind — with a main frame that is designed for front-mounted equipment, built-in provision for hydraulic pump, reduced front-end overhang, and better over-all balance. That is why the HD-5 does more work in its power range — at a lower cost and with less down time.

BUILT FOR TODAY'S JOBS. The pace-setting design of the HD-5 gives you important margins of safety in power, strength, and balance for longer, more productive tractor life. Each part is designed and built with a new standard of performance to meet today's increased use of tractor-mounted equipment.

BALANCED WEIGHT. The Allis-Chalmers all-steel, welded box A-type main frame eliminates dead weight and permits the weight to be placed where it will add to working strength and to tractor balance. For instance, the strong, heavy truck frames keep tracks in line constantly, contribute to better weight distribution and a lower center of gravity — with improved bulldozing and longer life.

ENGINE-MOUNTED DOZER. The box A-type main frame also permits the use of an engine-mounted dozer, with blade located close to the tracks for improved over-all balance, greater strength, and more accurate blading. This type of construction provides direct down pressure on the blade, eliminates heavy, bulky mountings that clog with material and debris, gives better accessibility for inspection and servicing.

GREATER GROUND CLEARANCE. Double reduction final drives provide ample ground clearance to take advantage of the HD-5's low center of gravity and full traction in mud, soft footing, or rough going.

Plus These Additional Money-Saving Features: *1,000-hour lubrication intervals* for truck wheels, idlers, and support rollers saves time, cuts labor cost . . . *unit construction* for easy servicing, because box A-type main frame makes major assemblies readily accessible for inspection, adjustment, and servicing . . . *operator comfort* second to none, with convenient controls, full vision, easy steering, and simplified shifting.

Write for detailed literature or contact your Allis-Chalmers dealer. He will be glad to demonstrate the advantages of the HD-5.

ALLIS-CHALMERS
TRACTOR DIVISION — MILWAUKEE 1, U. S. A.

Jobs Done Quicker, Cheaper

Attached to Tractors, Bulldozers, Motor Graders and Scrapers, the Automatic Slope-Meters are in use on the construction of highways, airports, dams and building sites. Slope-Meters are compact, sturdily constructed instruments that will automatically show the operator the exact grade of slope on which he is working.

Order from Your Equipment Distributor Today

THE SLOPE-METER CO. OR EXCELSIOR, MINN.

Fast delivery of stock to distributors is duplicated in emergency shipments to contractors in the field

In the shipping bay of the department, a packer checks smaller items, and an inspector, background, examines parts as a load of rubber-tire subgrader wheels is brought to the area for shipment.

call at any hour of the day or night to give special service or technical advice on B-K equipment.

Normally, orders are filled within 24 to 48 hours after receipt, although at times the fast processing operation has enabled Springdale employees to fill an order every seven minutes of the working day. Matching the speed of operations in the warehouse is the swiftness of delivery to the customers. Springdale, located near main rail, trucking, and air lines, presses all these facilities into service to speed parts on their way.

The department's trucks make three scheduled trips daily to nearby post offices, express offices, railroad loading docks, and commercial truck loading areas to start equipment on its way to customers. But the warehouse shipping facilities are also used by trucks engaged by the customer to pick up items. This method was used recently by the McCall-Gardner Machinery Co., the B-K dealer in Houston, Texas, when it ordered a transmission for a Hi-Boy Trukmixer. The order, phoned to Springdale in the morning, was consigned via a commercial trucking firm and was on its way to the customer in the afternoon.

Uses Air Facilities

Many of the rush shipments leaving the warehouse by department truck are handled air express or air freight after being delivered to nearby airports. For emergency orders, like the one placed by the G. W. VanKeppel Co., Inc., Kansas City, Mo., special trips are made by the trucks so that replacement parts can be rushed to loading areas. In this case, the distributor called for immediate shipment by air express of a set of three rubber-tired wheels for a Blaw-Knox concrete spreader. The wheels, weighing 80 pounds each, were processed through the warehouse and, prior to being packed, were given a regular inspection for quality and conformity with the customer's order.

Rushed to the Greater Pittsburgh Airport, the wheels were loaded on a plane, and the flight number, the time of arrival at the Kansas City Airport, and verification that the wheels had actually been loaded were wired to the customer. Not till the equipment was on the plane did the driver leave the

(Concluded on next page)

DRILLING CONTRACTORS

Diamond and Shot Core Borings, Dry Sample Borings, Grout Holes and Pressure Grouting, Foundation Testing for Bridges, Dams and all Heavy Structures

Manufacturers, also, of Diamond Core Drilling Machines and complete accessory equipment, including all types of Diamond Drilling Bits.

Write for Catalog No. 320

SPRAGUE & HENWOOD, INC.
Dept. C, Scranton 2, Pa.

The Barnes Line of Self-Priming Centrifugals ranges in suction and discharge sizes from 1-in. to 6-in. — with capacities from 2,000 to 90,000 G.P.H. Choice of Gasoline, Diesel, Electric or Pulley Drives.

It's Barnes Again

ON ANOTHER TOUGH ONE!

PUMPING 36,000 G.P.H. AT 130 FEET OF HEAD

Here is really a tough one! With the discharge lines running straight up for 100 feet and then taking off at an angle for 20 more feet — these two Barnes 90M Self-Priming Centrifugal Pumps are doing an outstanding job of controlling the water level in this gypsum quarry of the Celotex Corporation at Port Clinton, Ohio.

•

To make the job even tougher, the water is high in sulphur content and laden with grit and silt. Yet these Barnes pumps have been on the job day-in-and-day-out — one pump for 7 years — the other for 3 years. Maintenance has been practically nothing — only to shim the impeller of one pump to bring it within recommended clearances.

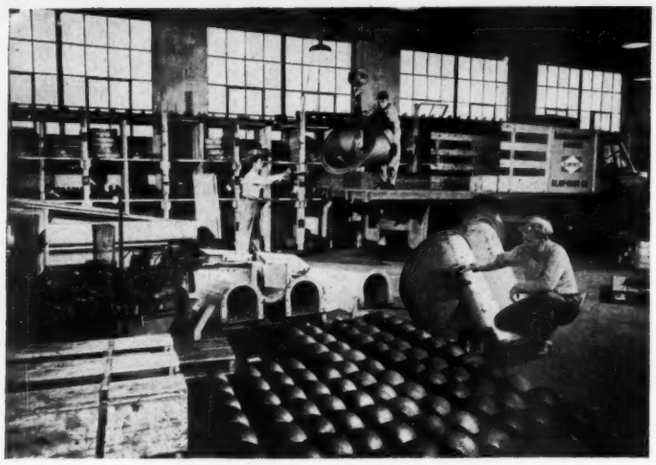
•

So it's Barnes again on another tough one. And if Barnes is tops on the tough jobs — think what a buy they are for the every day, ordinary de-watering jobs.

•

FOUNDED 1872
Barnes
MANUFACTURING CO.
MANSFIELD, OHIO

★ ★ ★ BUY THE BEST . . . BUY BARNES ★ ★ ★



In the receiving section of the Blaw-Knox dealer service division, a hopper for a B-K concrete mixer is unloaded while another hopper is given a coat of protective paint.

(Continued from preceding page)

airport. Later in the afternoon, the dealer picked up the order at the Kansas City Airport. Since special trips like this involve additional expense, the charges were included on the customer's bill.

The Allegheny Valley Airport is only a few miles from the warehouse, enabling the department to make effective use of air transport in filling orders quickly. A commercial shuttle plane is frequently used to fly emergency shipments to air express loading docks at the Greater Pittsburgh Airport. The facility has also been used by customers in picking up their own orders.

In one such instance, the customer flew in after placing an order, picked up the parts which were already waiting at the airport, and took off again immediately. This order for Trukmixer sprockets was telephoned to the warehouse at 9:30 a. m. on a Saturday morning by the Trumbull Trucking Co., Niles, Ohio. Even with the limited crew on duty Saturday, the order was filled and waiting at the airport when the customer's plane arrived at 11 a. m.—an hour and a half later.

Right now, the department is aiming at lessening the number of emergency calls for equipment by making dealers capable of handling any call. In the meantime, its fast service to customers is helping cut downtime for contractors in the field.

THE END

Hi-Way Dealer in S. Carolina

The entire state of South Carolina will be covered for Highway Equipment Co., Inc., Cedar Rapids, Iowa, by the Long-Talbot Equipment Co., Columbia. The dealer will handle the complete line of Hi-Way spreaders for the manufacturer.

Omaha Standard Appoints Trailer Dealers

A number of distributors of the center-dump trailer manufactured by Omaha Standard Body Co., Council Bluffs, Iowa, have been appointed by the company.

In Colorado, Gunderson-Taylor Machinery, 1237 Shoshone, Denver, and at Grand Junction, will distribute the Standard trailer. Hunt Truck Sales & Service, Inc., 211 S. Tampa St., Tampa, and Hunt Trailer Sales, 2155 N. W. 27th Ave., Miami, will serve customers in Florida.

Three distributors in Minnesota are Blewett-Hanson, 2910 University Ave. S. E., Minneapolis; Bowen Trailer Sales, 1619 N. Front St., Mankato; and Arrowhead Equipment Co., 2931 W. Superior St., Duluth. Newlin Machinery Corp., 641 S. W. Boulevard, Kansas City, and Jack Spratt Road Machinery Co., 126 South Wichita, are Kansas dealers.

Mutual Wheel Co., 2345 4th Ave., Moline, Ill.; O. B. Avery Co., 1325 Macklind Ave., St. Louis, Mo., and N. C. Ribble Co., 1304 N. 4th St., Albuquerque, N. Mex., will handle sales in their respective states. Two Canadian distributors are Amercoma Trailer Sales, Ltd., 160 104th St., Edmonton, Alberta; and Transport Equipment Co., 1269 Albert St., Regina, Saskatchewan.

New Distributors Are Named By Allis-Chalmers Mfg. Co.

A number of distributors for various products made by Allis-Chalmers Mfg. Co., Milwaukee, Wis., have been named by the manufacturer.

Two distributors handling general machinery division products are the McJunkin Corp., 1352 Hansford St., Marietta, Ohio, and the J. H. Nicholson Supply Co., 2026 St. Mary's Ave., Omaha, Nebr. The former company will handle motors, controls, pumps, and Texrope V-belt-drive equipment in several counties in Ohio and West Virginia. The Nicholson company, distributing general-purpose motors, will cover the eastern portion of Nebraska and five counties in Iowa.

The new A-C distributor in the state of Washington, the Industrial Supply Co., 1844 State St., Bellingham, will sell Texrope equipment in two counties. The G. A. Fleet Co.,

●TENNANT Sweeper cleans 48" path; replaces 3 to 12-man crew.

New Compact Machine Sweeps Gutters Walks and Alleys at 1/5 Usual Cost

BY SWEEPING congested areas with a new type power sweeper instead of pushbrooms, Akron, Cleveland and several other cities may save up to 80% this year in labor costs.

The new sweeper, shown at the APWA meeting in New Orleans last fall, is a compact heavy-duty machine. It cleans a 48" path and turns easily in a 5-ft. radius.

Its sweeping capacity is reported to equal that of a 3 to 12-man pushbroom crew.

Sweeps Cleaner Than a Crew

The sweeper has a powerful brush-and-vacuum system which eliminates need for water spraying or "wetting down." A rotating curb-brush sweeps leaves, dust and litter into main path of the machine.

A 36" brush, in a vacuumized compartment, throws dirt forward into an enclosed 9 cu. ft. hopper. Sweeping speed, with 2-speed transmission, is 1½ to 8 MPH.

Pays For Itself In 6 Months

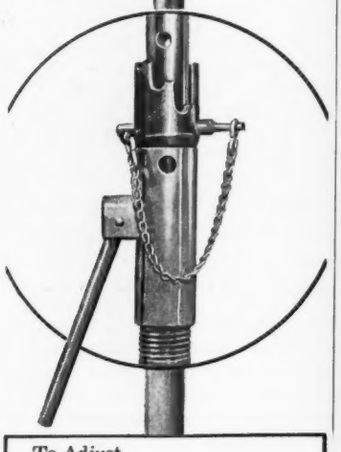
The new sweeper has proved most successful in "mechanizing" whitewing work in special congested areas where big sweepers can't be used—such as gutters in downtown areas, walks, alleys, garages, driveways, etc.

In such areas a single machine is said to pay for itself in 1 to 6 months.

Air terminals, auditoriums, piers and parking lots also can be swept most economically this way.

For details, please write or wire to the G. H. TENNANT CO., 2534 N. 2nd St., Minneapolis 11, Minnesota.

YOU CAN SET
THIS SHORE
IN ONE MINUTE
Speed SET



To Adjust
1. Lift upper staff, insert pin, and set on notch of Speedset that lifts head within 1½" of formwork.
2. Screw shore up final 1½" by turning built-in handle. Never more than six turns—usually less.
3. In sixty seconds or less—the shore is all set.

Three sizes for all shoring jobs
Three type heads available
Built-in nailing plates
All steel
For further information write

WACO Manufacturing Company
3569 Wooddale Ave.
Minneapolis 16, Minnesota
Canada
Armson Iron Works
Windsor, Ontario
West Coast
Waco-May Co.
Los Angeles, Calif.

DUDGEON
HYDRAULIC
JACKS
SALES, RENTALS
CAPACITY TO 600 TONS
FOR:
PILE TESTING
UNDERPINNING
BRIDGES
PIPE PUSHING
SOIL TESTING

Write to Dept. M
RICHARD DUDGEON INC.
EST. 1850
789 BERGEN STREET BROOKLYN, N. Y.
• ST 9-4040 •

175 Orawaupum St., White Plains, N. Y., will serve buyers of A-C controls and pumps in a number of New York, New Jersey, and Connecticut counties. Motors, controls, and transformers will be handled in the eastern section of Arkansas by the N. B. Nichols Co., 2509 Bishop St., Little Rock.

Clark Appoints New Dealers

George Industrial Equipment Co., Inc., 11th Avenue at 50th Street, New York, N. Y., has been named sole distributor in the greater New York area of fork-lift trucks and other material-handling equipment manufactured by the Clark Equipment Co., Buchanan, Mich.

A total of 25,000 square feet of floor space has been set aside for maintenance and repair operations on Clark equipment. In addition to sales, the firm will also lease equipment in accordance with Clark's new leasing plan.

Handling the line of equipment manufactured by the company's Industrial Truck Division is Eureka Boiler Works, Eureka, Calif., which will serve five California counties.

Heil Names New Distributor

The Roadway Mounting & Equipment Co., 21177 Mound Road, Van Dyke, Mich., has been appointed by the Heil Co., Milwaukee, Wis., as distributor in Monroe, Washtenaw, Wayne, Oakland, Macomb, and St. Clair counties.

The company will handle Heil dump bodies, hydraulic hoists, conversion hoists, heavy-duty twin-cylinder hoists, and hydraulic tailgates.

West Coast B-E Dealer

West Coast Engine & Equipment Co., Berkeley, is the new distributor for Bucyrus-Erie Co., South Milwaukee, Wis., in northern California. The dealer maintains headquarters at 1077 Eastshore Highway, and will offer sales and service on the full line of Bucyrus-Erie cranes, shovels, and draglines. Affiliated sales and service establishments in Sacramento, Stockton, and Fresno will complement the coverage of the new distributor.

New Parts and Service Store Is Opened by H. O. Penn Co.

As a convenience for owners of Caterpillar earthmoving equipment, the H. O. Penn Machinery Co., New York, N. Y., has opened a parts-service store on Orange Turnpike in Tuxedo Park, N. Y. Stocks of tractor and diesel engine parts are maintained at the new store, and a special overnight service permits the store to draw on the more complete inventories maintained in the Bronx, Poughkeepsie, and Mineola branches in New York, and the Newington branch in Connecticut.

Parts for other makes of construction equipment, including Bucyrus-Erie shovels and cranes; Foote concrete and blacktop pavers; Heltzel cement plants, bins, and road forms; Athey loaders and wagons; Cleveland trenchers; and Tarrant salt spreaders, are also stocked.

The service departments of the four branches of the company have been placed under the direction of a general service manager, Robert C. Meyer. Mr. Meyer will be in charge of the three New York branches in the Bronx, Mineola, and Poughkeepsie, and the Connecticut branch in Newington.

Mr. Meyer's appointment coincided with that of Stanley E. Wardell, the new sales promotion manager for the company. He has been a sales representative for the Caterpillar distributor for the past ten years.

New Manufacturer's Agent

W. H. Duffill, former manager of the construction machinery division of Worthington Corp., Harrison, N. J., serving as a manufacturer's agent along the eastern seaboard, concentrating on the distribution of products to concrete and compressed-air markets. He is making his headquarters at 97 Park Place. Watchung, N. J.

Mr. Duffill was with Worthington for 18 years, serving as east-central regional supervisor before he moved to New Jersey to take charge of field sales activities for the company.

Onan Distributor in Chicago

The Industrial Engine & Parts Co., 2345 S. Crawford Ave., Chicago, Ill., has been appointed a distributor of the entire line of products manufactured by D. W. Onan & Sons Inc., Minneapolis, Minn. The dealer will handle Onan electric generating plants, air-cooled engines, and separate generators in the Chicago

RENOVATES and RESTORES TURF

On Highways with Grass Islands!

This new *Renovataire* has giant 22" wheels with saw toothed curved knives that slice and penetrate turf up to 4" in depth. Gets air, water, and fertilizer down to the roots, opens up and renovates sod-bound highway turf. Hydraulic lift frame transports itself.

For Healthy Turf—Renovate!

SOILAIRE INDUSTRIES Minneapolis 3, Minnesota

Soil Aerating Machines—Power Rollers

Used by over 1500 institutions

• Quickly accepted by the nation's leading engineers and contractors, Labyrinth Waterstops—the first really satisfactory water seals—are now being used on all types of jobs... hydro electric plants, atomic energy plants, industrial plants, water and sewage plants, water reservoirs, underground and surface parking lots, swimming pools plus a host of lesser projects. (Names, and details furnished on request.) Why not get additional information on this time and money saving water seal? Just mail coupon below.

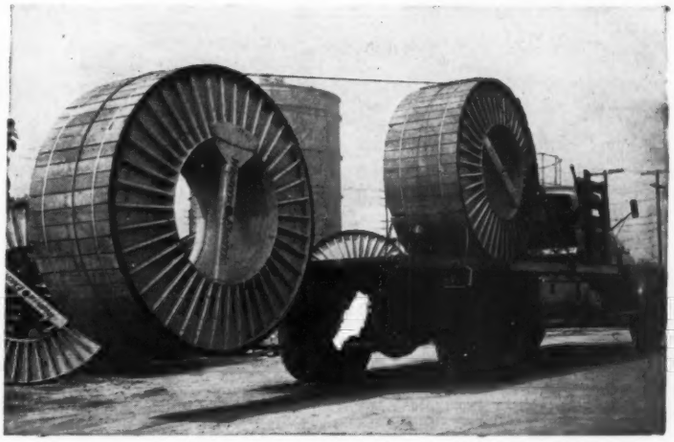
Eliminates seepage problems. Simplifies form work.

Made in Canada for J. E. Goodman Sales Ltd. Toronto, Ontario

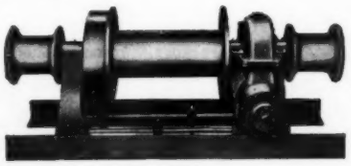
WATER SEALS, INC.
9 South Clinton Street Dept. 3
Chicago 6, Illinois
Please send complete information on Labyrinth Waterstops.
Name
Company
Address
City Zone State

TULSA TRUCK POWER WINCHES FOR LOADING

in construction, oil fields, public utilities and commercial hauling, the favorite time and labor saver is a Tulsa Winch. Literally hundreds of heavy and difficult jobs can be handled quickly, easily and safely with a Tulsa Winch. Heavily constructed of the finest materials, Tulsa Winches pay for themselves every day through untroubled performance. Equip your trucks and crawler tractors NOW with Tulsa Winches.



Tulsa Winch-equipped truck used by a public utility company shown loading 3-ton cable reels with a Model 23 Tulsa Winch.



Tulsa* Winch
TULSA, OKLAHOMA DIVISION OF VICKERS Inc.

*Reg. U. S. Pat. Off.

trading area. A. A. Russ is president of the dealer company, which has complete service and repair facilities for all Onan equipment.

Dealer for G-E Division

The entire line of standard cemented carbide tools and blanks, carbide-tipped masonry drills, and diamond wheel dressers manufactured by the Carboloy Department of General Electric Co., Detroit, Mich., will be handled by a new distributor, Dietz Industrial Supply Co., Aurora, Ill.

Galion Names Florida Dealer

Galion Allsteel dump bodies and hydraulic hoists will be distributed in central and western Florida by the Power Brake & Equipment Co., 230 S. Water St., Tampa. Complete service facilities for products made by Galion Allsteel Body Co. will also be offered.

New Warco Dealer in Vermont

Vermont Road Equipment Co., Inc., Montpelier, Vt., is a new state-wide dealer for Warco 4D-85 and 4D-115 motor graders manufactured by the W. A. Riddell Corp., Bucyrus, Ohio. The firm will provide complete service on Warco equipment and will handle sales. The president and general manager of the Vermont firm is R. J. Grossett.

Dealers—This is your department, so send in your company news and photographs—all about new plants, new lines handled by your firm, and staff changes within your organization.

This detailed view of the linkage between the tractor and scraper of the Super C Tournapull shows the Shepherd Hydro-Steer unit installed to hold the earthmover in a straight line.

Hydraulic-Steer Rams Hold Scraper in Line

■ Positive steering control becomes automatic on LeTourneau Super C Tournapulls when they are equipped with the hydraulic Shepherd Hydro-Steer. The Model C Tournapull is a self-powered earthmover consisting of a wheel tractor and scraper.

Completely self-contained and requiring no engine power, Shepherd Hydro-Steer will hold the Super C Tournapull in a straight line regardless of wheel slippage, grade, overpushing, or operator inattention. Full engine power for traction and full braking of both drive wheels are possible under all conditions. Jackknifing and inadvertent control reversal are eliminated so that machine capacity is increased even under adverse conditions.

The control unit consists of heavy-duty hydraulic rams mounted between the tractor and scraper. Two mono-directional hydraulic systems permit a change in the ram position only when the regular operator controls are actuated and only in the desired direction.

Manufactured by Shepherd Tractor & Equipment Co., Atlantic and Bandini Blvds., Los Angeles 22, Calif., the Hydro-Steer unit is available as a complete kit that can be easily installed with regular welding equipment.

For further information write to the company, or use the Request Card that is bound in at page 18. Circle No. 472.

Rewind Engine Starter

■ A leaflet describing an improved rewind starter for gasoline engines is offered by the Armstrong Products Co., 6450 N. Teutonia Ave., Milwaukee, Wis. The Armstrong Bulldog starter is designed with two cam-actuated shoes that extend to grip inside a standard rope starter-pulley cup. This eliminates the danger of teeth or pawls breaking.

Typical applications are made on gasoline power units, chain saws, etc., and rotary mowers.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 389.

LOW COST ASPHALT SURFACE REPAIR AND MAINTENANCE...
with the *New* LITTLEFORD CLARKMOORE ASPHALT ROAD HEATER-PLANER

FOR HEATING AND PLANING BITUMINOUS ROADS, STREETS AND AIRPORT RUNWAYS

Littleford-Clarkmoore Heater-Planer permits low cost resurfacing, speeds up major maintenance and repair work on bituminous highways, roads, streets or airport runways.

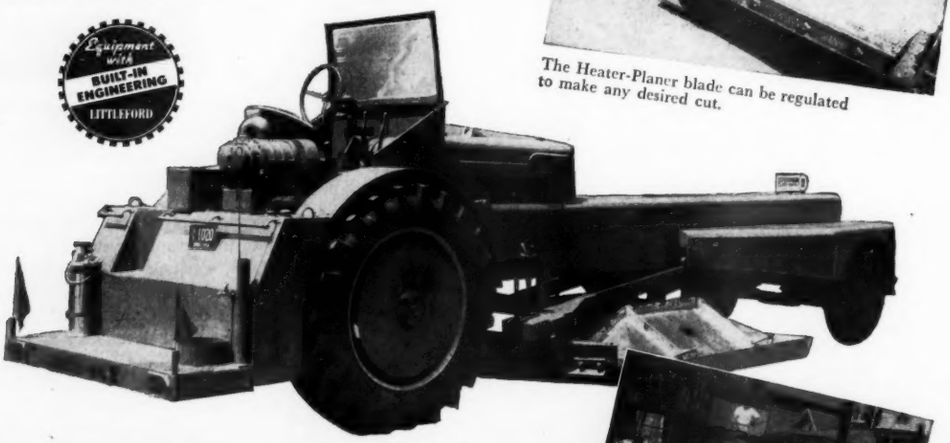
- Levels rough sections and removes high road crowns.
- Eliminates corrugations on hills and at stop signs.
- Get's rid of troughs and ruts developed by heavy traffic.
- Planes off top surfaces to prepare for seal coating or resurfacing with plant mix or other bituminous materials.
- Removes fatty sections or slippery places. Roughs bad hills to avoid skidding.
- Provides a level course where settlement of surface makes it necessary to build up.

The operation of the Heater-Planer is continuous. It heats and planes as it travels, it's fast and sure. Gives life back to the bituminous surfaces. The reclaimed asphalt can be reused. The Heater-Planer is hydraulically operated, has finger-tip control for operating the blade and surface heater.

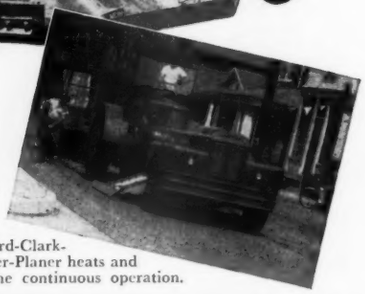
For low-cost table-top smooth riding surfaces, the Heater-Planer is the new modern Road Maintenance Unit.

The Heater-Planer blade can be regulated to make any desired cut.

Equipment with BUILT-IN ENGINEERING LITTLEFORD



Littleford-Clarkmoore Heater-Planer planes off and windrows the material so that it can be easily shoveled into a truck. The crew works behind the Heater-Planer, not out in traffic.



The Littleford-Clarkmoore Heater-Planer heats and planes in one continuous operation.

LB LITTLEFORD
BLACK TOP ROAD MAINTENANCE EQUIPMENT SINCE · 1900

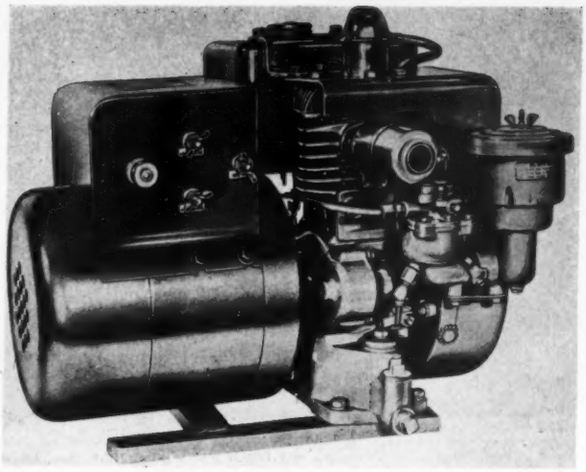
LITTLEFORD BROS., INC.
485 E. Pearl Street, Cincinnati 2, Ohio

New Battery Charger For Larger Capacities

■ A compact battery-charging set for the larger capacity ranges is announced by Universal Motor Co., 529 Universal Drive, Oshkosh, Wis. The Model 21-MS unit is rated at 1,000 to 1,200 watts, 32 to 40 volts dc for battery charging. It has ample capacity for maintaining lighting batteries as well as engine-starting batteries.

The battery charger is powered by a single-cylinder air-cooled 4-cycle gasoline engine, directly coupled to the generator. It has a push-button electric starter switch, reverse current relay, and a battery ammeter for indicating the charging rate. There is also an adjustable rheostat for regulating the battery-charging current from 15 to 30 amps.

For further information write to the company, or use the Request Card that is bound in at page 18. Circle No. 482.



◄ The Universal Model 21-MS battery-charging unit.

Dwarf Orange-Peel Buckets

■ The Hayward dwarf line of orange-peel buckets is illustrated in literature available upon request. These buckets are built in five sizes, and the smallest will operate inside a 12-inch-diameter pipe. They dig to any depth, limited only by the length of the operating lines.

Materials such as broken stone, boulders, old timber and metals, and other matter found in filled-in ground, can be removed from the inside of pipes and cylinders. For hard and sticky materials, a hammer-weight attachment which acts like a small pile driver is recommended by the company.

To obtain this literature write to The Hayward Co., 50 Church St., New York 7, N. Y., or use the Request Card at page 18. Circle No. 404.

Recommended Lubrication For Construction Machines

■ The proper lubrication of equipment is the subject of a new booklet from the Lubriplate Division, Fiske Bros. Refining Co., 129 Lockwood St., Newark 5, N. J. It is emphasized that the present-day lubricant not only performs the basic jobs of reducing friction and wear, but must also be a protective medium against rust and corrosion. Furthermore, while the company offers a wide variety of fluid and grease products, it has developed a number of multi-purpose lubricants to simplify lubrication in many instances.

The booklet contains details on Lubriplate products and recommendations for their use on construction equipment, cement and quarry plants, and trucks.

To obtain this literature write to the company, or use the Request Card that is bound in at page 18. Circle No. 462.

Check your Tackle Blocks for best service. Worn sheave grooves, bearings and pins are expensive.
LOWER HANDLING COSTS
● Blocks correctly designed and engineered for your specific operation save money.
Our engineering services are available for your specialized needs.
Over a quarter century of service.
Send for our complete catalog today.
MADESCO TACKLE BLOCK CO.
EASTON, PA.
MADESCO
BLOCKS
HAE-M592—2-54

Safety-Beam Guard Rail

on Pennsylvania Turnpike near Reading

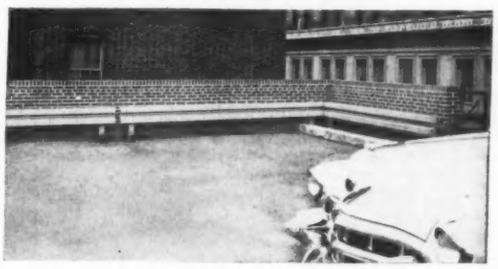
The above picture, taken along the Pennsylvania Turnpike, shows four strips of Bethlehem Safety-Beam Guard Rail. At the left, Safety Beam is protecting vehicles from a steep drop. In the center, a double line of Guard Rail forms a continuous impact-absorbing medial-strip divider. At the right, motorists are protected by Safety Beam installed on a dangerous curve.

Bethlehem Safety-Beam Guard Rail is made of sturdy sections of steel plate, bolted together on steel, wood or concrete posts. It bolts flush end-to-end, making one continuous beam, a factor which greatly simplifies installation on sharp curves.

What's more, Safety-Beam is easy to install, even by unskilled labor. No end anchor rods, special tools or complicated adjustments are required.

For more information about this and other steel products for highways, call the Bethlehem Sales Office nearest to you, or write direct to us at Bethlehem, Pa.

Besides protecting motorists at highway danger spots, Safety-Beam Guard Rail is used effectively in other protection-giving applications.



Parking garage roof in Atlanta, Ga.

Protected walkways for passengers at Shreveport, La., Airport.

BETHLEHEM STEEL COMPANY
BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation

BETHLEHEM STEEL

BETHLEHEM STEEL

Tight Quarters Restrict Concrete Work on Dam Unit

Concrete for the intake structure is produced in this Johnson semiautomatic batching and mixing plant. Materials are carried from a 6-yard hopper to the top of the plant by a 280-foot-long Barber-Greene conveyor.
C&E Staff Photo

HIGH ROCK WALLS that rise almost vertically around three sides of the intake structure at Buford Dam in Georgia provided some tough concrete-placing problems for the J. A. Jones Construction Co., Charlotte, N. C. Jones has a $2 million contract with the U. S. Army Corps of Engineers to build a 3-monolith intake-structure against the upstream face of the rock abutment that separates the forebay and tailrace channels.

First concrete was placed in March, and by the beginning of summer, the structure had risen high enough above the intake tunnels in the abutment to permit the contractor on the main dam to divert the river through the tunnels and begin work on the dam. This scheduling was no accident. Jones had to get the intake structure placed to a height of 68 feet by June 15 or face a stiff penalty. By using one crane high up on the abutment and two other cranes in the cut, he placed concrete at the rate of about 5 feet per week and met the deadline.

The intake structure is 143 feet wide, 86 feet deep at the base, and 195 feet high. It will have the necessary trash racks, gates, stop logs, and other devices for controlling the water flow through the tunnels. Jones' contract also includes an extension to one tunnel, retaining walls, and a stilling basin.

Concrete Plant

Some line drilling was done first to prepare the rock walls and foundation for the structure. At the same time, the contractor set up a Johnson semiautomatic batching and mixing plant. Four sizes of trap-rock aggregate were trucked in from local producers. Sand was supplied by Tyrone Rock Products Co., Tyrone, Ga. The ¾-inch, 1½-inch, 3-inch, and 6-inch aggregates were supplied by a local producer.

The plant was set up on a flat area adjacent to one of the saddle dikes so that aggregate trucks using the road on top of the dike could dump their loads directly into the stockpiles. Timber partitions separated the various sizes of aggregate.

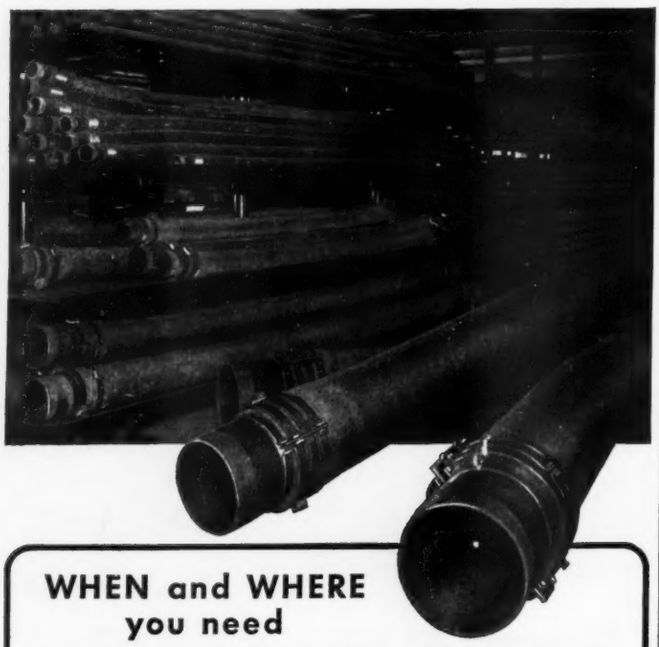
A Barber-Greene 280-foot-long inclined conveyor with a 30-inch belt carried the aggregate from a 6-yard hopper to the top of the plant. The hopper was charged from the stockpiles with a Hough Payloader.

Cement was hauled in from Buford in 60-barrel trucks and stored in a 2,700-barrel silo. Water from the river was pumped to a 30,000-gallon storage tank by two 4-inch pumps.

Concrete was mixed in two Koehring 2-yard mixers and hauled to the site in 2-yard buckets set in Euclid dump trucks, and in 1-yard buckets set in smaller trucks.

Placing

Pours were handled by three cranes. A Bucyrus-Erie 54-B crawler crane was positioned on the ledge near the face of the abutment about 119 feet above the base of the structure. This crane placed all concrete near the vertical rock face, and the



WHEN and WHERE you need

SUCTION HOSE

Call for "RIGHT NOW" delivery—any size—1½" through 10"—from a nearby Continental Warehouse

You can bank on fast delivery whenever you call *any* Continental Warehouse. They *all* carry big stocks of Suction Hose . . . many of them have both 8" and 10", ready to put on the road the minute you call.

You have no profit-eating delays while waiting for long distance shipments . . . no need to tie up your own working capital in costly inventories.

So the next time you need Suction Hose, or any other hose*, call or wire your nearest Continental Warehouse. You'll like the service you get.

HOSE by CR **CONTINENTAL**

*A complete line for Contractors: Air, Water, Steam, Suction, Discharge and Pile Driver Hose. Protective Clothing, Boots and Gloves. Send for latest catalog.

BALTIMORE 1, Md. 122 South Howard St.
BOSTON (Allston 34), Mass. 12 Franklin St.
BUFFALO 3, N. Y. 115 Clinton St.
CHICAGO 10, Ill. 10 West Hubbard St.
CINCINNATI 2, Ohio 49 Central Ave.
CLEVELAND 15, Ohio 2731 Prospect Ave.
DETROIT 27, Mich. 13801 Schoolcraft Ave.
INDIANAPOLIS 2, Ind. 309 North Capitol Ave.
MEMPHIS 3, Tenn. 268 Madison Ave.
NEW YORK 7, N. Y. 81 Murray St.
PHILADELPHIA 6, Pa. 311 North Randolph St.
PITTSBURGH 21, Pa. 607 Brushton Ave.
ST. LOUIS 8, Mo. 4018 Olive St.
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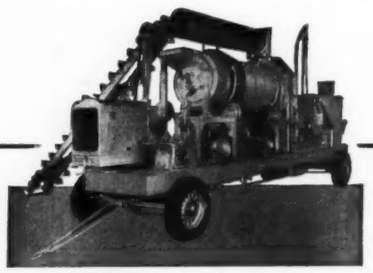


Portable Asphalt Plants For City, State, Repairs and Small Contract Work

These 8-10 tons per hour Asphalt Plants economically repair almost any pavement. Asphalt, brick, concrete, macadam, can be resurfaced or patched. Alleys, driveways, sidewalks, industrial plants can be paved.
Produce for immediate hot laying, or for deferred cold patching. Match any bituminous surface.
Mixes at plant, including labor, fuel, and overhead, cost about $4 per ton, with $2 aggregate. Average 160 to 200 sq. yds. 1" thick per hour. A money-maker for small contract work. Also larger plants, 15 and 30 tons per hour.

Write for catalog and name of nearest dealer.

Elkhart 9 White Mfg. Co. **Indiana**

Crane perches on ledge 119 feet above intake structure and lowers 2-yard buckets for pours on Buford Dam

rest was handled by a 38-B crawler and a 22-B truck crane working from the floor of the forebay.

One of the toughest pouring problems was controlling the bucket as it was lowered approximately 150 feet to the hole from the haul road above by the 54-B crane. Ordinarily, such a long length of cable would have caused the bucket to rotate badly, making it difficult to handle. Jones solved the problem with a Miller ball-bearing swivel hook and headache ball. This device permitted the cable to rotate rapidly without any effect on the bucket. Even when suspended 200 feet, the bucket was easily handled by workmen.

Pours were made in 5-foot lifts, and Blaw-Knox cantilever forms and Jackson 2-man vibrators were used. Jones worked around the clock, usually placing concrete during the last two shifts of each day. The average pour was about 350 yards,

(Continued on next page)

On the haul road, 119 feet above the intake structure, a Bucyrus-Erie 54-B crane lowers a bucket approximately 150 feet to make a pour. A Miller ball-bearing swivel hook and headache ball allow the cable to rotate and keep the bucket from turning.

C&E Staff Photo

EAGLE'S NEW DESIGN GIVES YOU GREATER LOADING HEIGHT AND GREATER THROW

It's no problem to pitch the load onto any standard truck—even the higher ones—with Eagle's longer and higher conveyor.*

The farther throw of this longer conveyor (now 15') simplifies loading trucks immediately ahead of the Eagle. Raising or lowering conveyor can now be done hydraulically between 9' minimum and 11' maximum.

Send for details and prices!

*Extra length and hydraulic control are optional at slight extra cost.

EAGLE CRUSHER CO., Inc. GALION OHIO·U·S·A

JAW CRUSHERS • IMPACT BREAKERS PULVERIZERS • CONVEYORS • LOADERS

Before and after stripping foundation for Mile High Center, new Denver skyscraper. George Fuller, Gen. Contr., R. W. Mier Co., Forming Erectors.

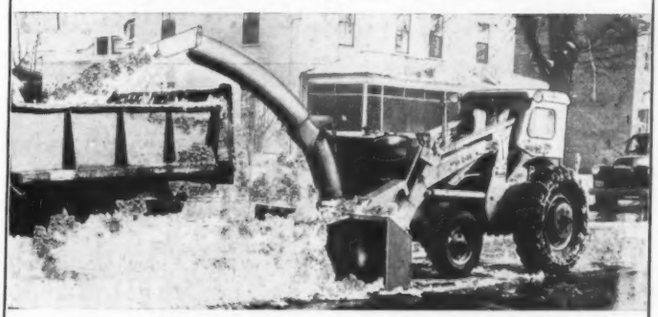
SYMONS FORMS FOR 28' WALL

28' high walls are quickly formed and poured with Symons steel rib forms. Pilasters, pockets and inserts are easily handled. Forms also used for pile caps.
R. W. Mier states, "Symons Forming System has given him the lowest labor cost of any type of forming he has ever used."
Send plans for your next job and get complete layout and cost sheet—no obligation. Our Catalog F-9 also available upon request. Symons Clamp & Mfg. Co., 4251-J-4, Diversey Avenue, Chicago 39, Illinois.

BROS *tip sheet*

EQUIPMENT NEWS FROM A FAMOUS NAME IN ROAD MACHINERY

YOU CAN LOAD A 5-YD. TRUCK IN 30 SEC. USING ONLY A 30 H. P. ENGINE!



...and this rugged rotary snow plow actually costs less than one good shoveler's pay for 6 months!

● You've got real snow-throwing ability in a small package in this Bros Series "A" Sno-Flyr Rotary! This plow on your small rubber-tired tractor* or 4-wheel drive jeep will actually load 5-yard dump trucks in just 30 seconds, compared with 5 to 10 minutes required for hydraulic front-end bucket loading. Or, in another comparison, it will do the work of more than 100 hand shovelers.

And—when the Bros Series "A" is mounted on your front-end loader, it will plow deeper snow than expensive heavy-duty 4-wheel drive truck rotaries. Yet you pay for only 30 h.p. How's that for economy?

This Rotary will plow snow as high as you can lift your front end loader arms, and the casting chute rotates 180° in a horizontal plane. A simple loading chute attachment makes loading easy in any position.

*Mounts readily on most wheel-type tractor front end loaders, replacing loader bucket and using same pins. (Other hitch applications on request.) New model for Jeeps now available.

Note the unique slit-spiral rotor, which "knifes" through wet, chunky or hard-packed snow. Three models—4'4", 5'6" and 6'6" plowing widths.

"Quickies" for your information

Because you can turn the Series "A" casting chute 180°, you can load into a truck dead ahead of the plow. By keeping snow windrows low enough for trucks to straddle, this "single lane" loading is ideal for narrow streets or congested areas.

Bros also makes the Series "M" Sno-Flyr Rotaries for 4-wheel drive trucks, motor graders and crawler tractors.

●

Bros also makes self-propelled Sno-Flyr sidewalk models 20" and 26" widths.

Road Machinery Division... **WM. BROS BOILER AND MFG. CO.**

1189 Tenth Avenue S. E. • Minneapolis 14, Minnesota

To get specifications and data on any of the Bros snow removal products listed below, just check the items which interest you and send us this slip, along with your name, company or organization and postal address.

☐ Series "A" Sno-Flyr Rotaries for tractor loaders
☐ Series "SA" self-powered Sno-Flyr Rotaries, 21" and 26"
☐ Series "A" Sno-Flyr Rotaries for Jeeps
☐ Series "M" Sno-Flyr Rotaries for 4-wheel drive trucks
☐ Bros blade-type push plows
☐ Series "M" Sno-Flyr Rotaries for motor graders
☐ Series "M" Sno-Flyr Rotaries for crawler tractors

(Continued from preceding page)

but some went as high as 750. Inaccessible areas were poured with elephant trunks. Forms were stripped in 48 hours, and a water cure continued for 14 days.

Multipurpose Dam

Buford Dam will be a rolled earth-fill structure across the Chattahoochee River about 35 miles northeast of Atlanta. The multipurpose unit will store water as a means to flood control, while it will also improve navigation, generate hydroelectric power, provide a water supply, and create recreational facilities. Total cost will be over $40 million.

The forebay and tailrace were excavated rock on the west bank next to the dam. Two penstock tunnels and one sluice tunnel were cut through the abutment. The powerhouse will be built next to the downstream face of the abutment and will contain two 40,000-kw units and one 6,000-kw unit.

Major items on the earth dam include 2½ million yards of random fill, 1¼ million yards of select fill, and 560,000 yards of rock fill.

Personnel

B. F. Macon is superintendent for J. A. Jones Construction Co., and C. A. Jackson is resident engineer for the Mobile, Ala., District of the Corps of Engineers, headed by Col. H. L. Fox. THE END

Fittings Make Scaffolds Of Standard 1-Inch Pipe

■ A booklet on special fittings that are used to construct simple scaffolds of standard 1-inch pipe is available from the Amidon Engineering Co., 38-369 Cleveland Road, Elyria, Ohio.

An Amidon three-way fitting has three holes with ample clearance to allow the fitting to slide over 1-inch pipe in any position. A two-way fitting wraps around one pipe and hugs a second pipe into a tight point.

The literature also illustrates a sleeve with set screws, but without threads, that acts as a pipe coupling.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 444.

Front-End Loaders

■ Two new heavy-duty loaders have been announced by the Shawnee Mfg. Co., Inc., 1947 N. Topeka Blvd., Topeka, Kans. The basic design for the Loadmaster, which fits larger tractors, has been made on the Ford-son Major diesel tractor. The Special, for smaller tractors, has been designed for all of the Ford and Ferguson tractors.

Both models are of all-welded construction and feature two-pin installation. They are constructed free of bolts, have double-acting cylinders throughout, and employ an oversized hydraulic system.

For further information write to the company, or use the Request Card that is bound in at page 18. Circle No. 369.

Turnpike
CONTRACTORS CHOOSE McCARTHY AUGER DRILLS

● Where the going is tough — on the Pennsylvania Turnpike, New York Thruway, West Virginia Turnpike and elsewhere — contractors choose rugged, powerful McCarthy Drills.

On the Ohio Turnpike, near Windham, this McCarthy Vertical Auger Drill drills 6-inch blast holes to a depth of 18 feet at the rate of 22 holes in 8 hours.

Operators like the great new McCarthy. It is rugged, mobile and dependable. In any earth or rock formation consisting of compacted sand and gravel, hardpan, shale, and most sandstone formations, the McCarthy is faster than any other.

Easy-to-move, easy-to-set-up McCarthy Verticals operate on gasoline, diesel or electrical power units. They require only a two-man crew.

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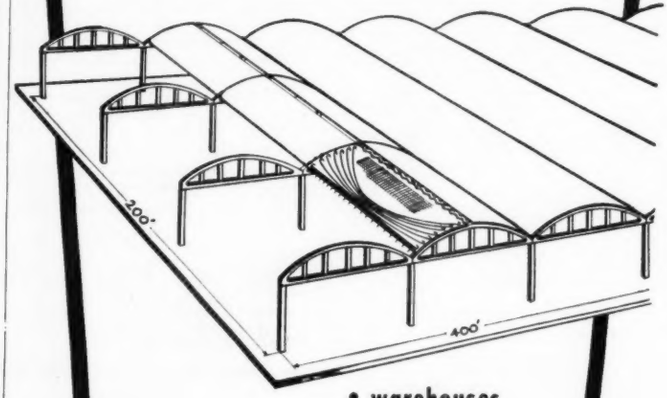

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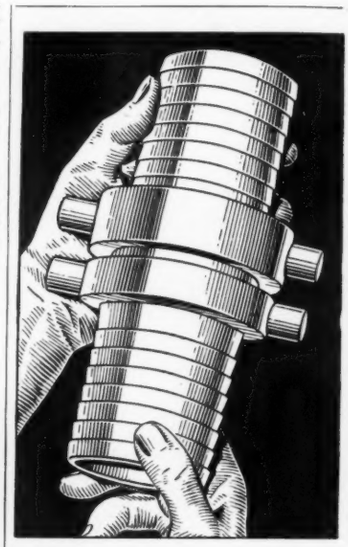

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Shank Coupling

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The "KING" is a brute for punishment, yet thoroughly refined in every detail of manufacture . . absolute uniformity in quality, dimensions and threading . . . well defined, smoothly finished corrugations. Made in light and heavy patterns, in all-malleable iron, plain or plated; all-brass; and plain or plated malleable iron shanks with brass swivel nut. Size range from 1" to 8", inclusive.

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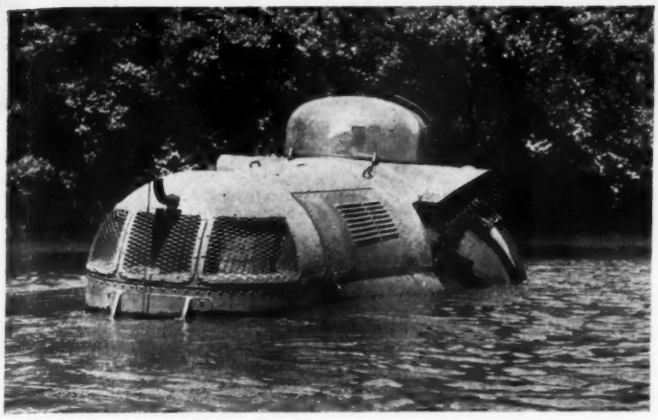


This is a stern view of the amphibious Rhino, powered and steered by its Hydrojet nozzle located at the stern. Tilted, hemispheroidal, aluminum wheels buoy the vehicle for travel in water and carry it over swamps or down a highway.

Vehicle Crosses Water or Speeds Down Highway On Hollow Hemispheroidal Wheels

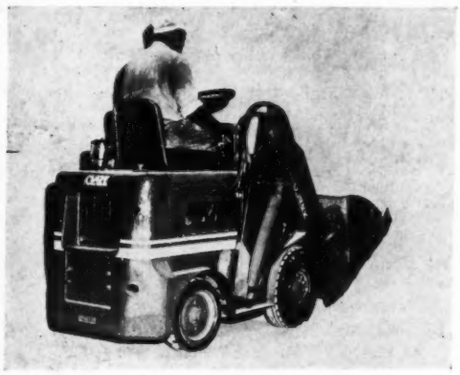
■ An amphibious vehicle that travels across mud flats, marshes, sand, and rough terrain, and also cruises in water, has been built by Marmon-Herrington Co., Inc., 1511 W. Washington St., Indianapolis, Ind. The Rhino, invented by Elie P. Aghnides, has shown in tests that it can also climb 65 per cent grades, or travel down the highway at 45 mph.

The amphibious vehicle runs on a huge pair of hemispheroidal, hollow, spun-aluminum wheels in front, and a smaller pair in the rear. For highway operation, only a narrow rubber tread touches the road. In soft places, the traction area is increased with every inch the wheels sink.

The Rhino is floated in deep water by the large hemispheroidal wheels and by its watertight body. Power and steering in the water are provided by Hydrojet, a method of propulsion reported to make the vehicle so maneuverable in water that it turns easily in its own length. Power for the prototype model of the vehicle is provided by a 110-hp Ford engine.

For further information write to the company, or use the Request Card at page 18. Circle No. 495.

Small Tractor-Shovel for Loose Materials



The Clark Bulk Loader mobile shovel.

■ A small mobile tractor-shovel, with a capacity of 11 cubic feet or 1,200 pounds for handling loosely packed bulk materials, is announced by the Industrial Truck Division, Clark Equipment Co., Battle Creek, Mich. The machine has an outside turning radius of 73 inches, which makes it suitable for working in confined areas. The Bulk Loader tractor-shovel is 109 inches long, 46½ inches wide, and has an overall height of 60 inches The weight of the unit is 4,400 pounds.

The unit's bucket lifts in six seconds, dumps in one second, and lowers in three seconds. Dumping angle is 60 degrees. The bucket can be carried in the lowered position without spilling. A 4-cylinder Continental gas engine and both forward and reverse speeds are power features.

For further information write to the company, or use the Request Card at page 18. Circle No. 342.

LeTourneau-Westinghouse Opens a New Parts Depot

A western parts depot, to handle the emergency needs of distributors on the west coast and in British Columbia, has been opened by LeTourneau-Westinghouse Co., Peoria, Ill., at 1545 Park Ave., Emeryville, Calif.

Companies serviced by the Emeryville depot are: Crook Co., Los Angeles and Bakersfield, Calif.; Bay Cities Equipment, Inc., Oakland, Calif.; Loggers & Contractors Machinery Co., Inc., Portland and Eugene, Oreg.; Superior Equipment Co., Phoenix, Ariz.; Pioneer Equipment Co. of Nevada, Reno; Rocky Mountain Machinery Co., Salt Lake City, Utah; Western Equipment Co., Boise, Idaho; Modern Machinery Co., Inc., Spokane and Seattle, Wash.; and Vancouver Equipment Corp., Ltd., Vancouver, B. C.

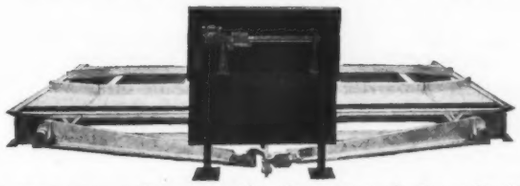
Trailers for Variety of Construction Uses

■ Among the wide variety of trailers offered the contractor by Trailmobile, Inc., Cincinnati 9, Ohio, are dump platform, open-top, and bulk-cement units, machinery trailers, and field office models.

One of the newest of the Trailmobile trailers is the Model TD-622 dump trailer, a tandem-axle unit of 25-ton capacity. This unit is also available in a 15-ton model.

For further information write to the company, or use the Request Card at page 18. Circle No. 499.

WINSLOW—PORTABLE TRUCK SCALE
"THE CONTRACTORS' SPECIAL SCALE"



For use at temporary and permanent locations—at stock piles and by bituminous material contractors at the job site. Capacities: 15-18-20-30 tons.

Write us for name of your nearest distributor.

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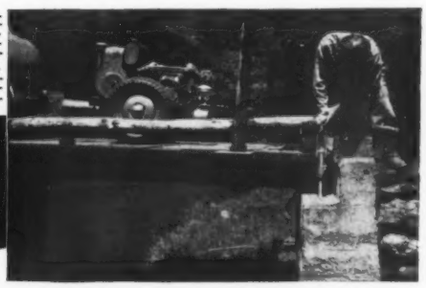

WISCONSIN-POWERED COMPRESSOR

Supplying dependable AIR-COOLED power for this P244 GH Ingersoll-Rand Air Compressor for operating a J-10 Jackhammer, engaged here in drilling light standard hole in a bridge pier, is a typical assignment for Wisconsin Engines.

Wisconsin heavy-duty engineered design and construction, *plus* dependable AIR-COOLING and ready adaptability to installation on practically any type of equipment requiring power components from 3 to 36 hp., are factors that make Wisconsin Engines the *preferred power* among both original equipment manufacturers and purchase-for-use customers.

You can't do better than to specify "Wisconsin Power" for your equipment. Descriptive and engineering data gladly supplied.

Power TO FIT THE JOB Power TO FIT THE MACHINE

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A clear liquid which penetrates 1" or more into concrete, brick, stucco, etc., seals—held 1250 lbs. per sq. ft. hydrostatic pressure. Chks conns. Applied quickly — no mixing — no cleanup — no furring — no membranes. Write for technical data — free sample.
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MANUFACTURER MEMOS

The new officers of the "Quick-Way" Shovel Co., Denver, Colo., are, left to right: Wilson H. Madden, vice president and general manager; Louis T. M. Ralston, president, and William R. Knowles, treasurer.

"Quick-Way" Shovel Co. Names Ralston President

Louis T. M. Ralston, president of Industrial Brownhoist Corp., Bay City, Mich., was elected president of the "Quick-Way" Truck Shovel Co., Denver, Colo. Both companies are wholly owned subsidiaries of Penn-Texas Corp., New York, N. Y. Oscar L. Chapman, formerly Secretary of the Interior, is the new chairman of the board of "Quick-Way", and Luke E. Smith, founder and former president, continues as consultant. Newly appointed vice president and general manager is Wilson H. Madden, and William R. Knowles is the new treasurer of the company.

"Quick-Way", manufacturer of truck shovels, will continue to maintain headquarters in Denver. The unification of "Quick-Way" and Industrial Brownhoist under a single head is to coordinate the activities of both firms.

LeTourneau-Westinghouse Sales Representatives

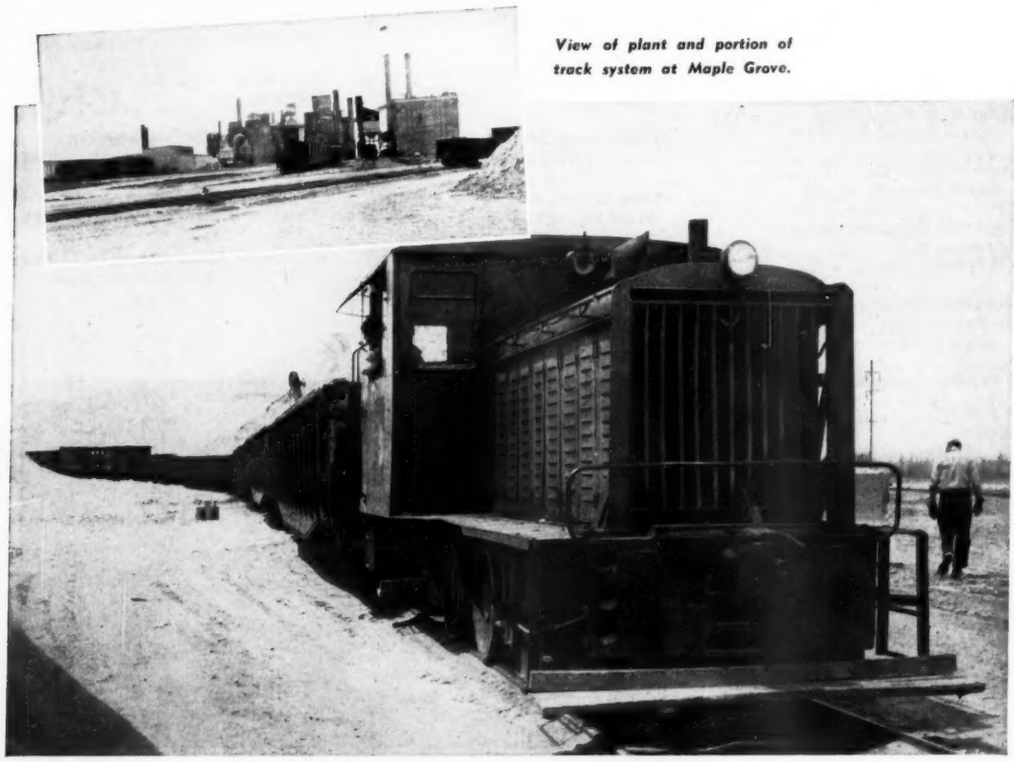
William H. Schwagmeyer has been made district sales representative for the southern states and William C. Knight, district manager for the Michigan-Ontario area, by LeTourneau-Westinghouse Co., Peoria, Ill.

Mr. Schwagmeyer, formerly sales engineer in the wire rope sales division of the company, will cover Kentucky, Tennessee, Virginia, and North Carolina. His headquarters will be located in Lexington, Ky. Mr. Knight was transferred from the southern territory to serve an area including the lower peninsula of Michigan and part of the Province of Ontario in Canada. His headquarters will be in Pontiac, Mich.

Le Roi Promotes Three

The organization and management of the newly created sales division of Le Roi Co., Milwaukee, Wis., has been turned over to Jack E. Heuser, the new vice president in charge of sales. Mr. Heuser was assistant to the general sales manager and engine division sales manager before his present appointment. He will have charge of sales and service for the company's line of engines, air compressors, mixers, and rock drills.

Two other appointments have also been made by the company in a move to coordinate product development and research with sales. Ray H. Rodolf is now ganeral manager of the compressor division, and Herschel V. Hiatt, general manager of



View of plant and portion of track system at Maple Grove.

25 Year Old Plymouth Repowered with TORQOMOTIVE DRIVE

In 1929 this 6 wheel, 30 ton Plymouth went into service at the Maple Grove, Ohio Works of Basic Refractories, Inc. Working up to 425 hours per month, this gasoline powered, mechanical drive locomotive replaced steam power for hauling, spotting and switching railroad cars at the large refractory plant yards.

In 1950 a Plymouth Diesel-Torque-Converter Repower unit was installed in the locomotive along with other alterations. Mr. A. M. Caito, Works Manager, reports the Diesel-Torqomotive conversion greatly improved operating qualities. Maximum power application with minimum wheel slippage, simplified controls, reduced service time and repairs are some of the main advantages gained. In addition, the Plymouth can now be used for double heading with other motive power when needed.

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the engine division. Mr. Rodolf was formerly sales manager of the construction and mining division and Mr. Hiatt was formerly director of engineering.

Joy Elects John Lawrence

The new executive vice president of the Joy Mfg. Co., Pittsburgh, Pa., manufacturer of drilling equipment, hoists, and tools for the construction industry, is John Lawrence. He steps up from the post of vice president of manufacturing and engineering, to which he was named in April, 1953.

John Lawrence, newly elected executive vice president of the Joy Mfg. Co.

Mr. Lawrence joined the Joy company in 1951 as vice president of manufacturing. His prior experience included seven years with SKF Industries, Inc., Philadelphia, Pa., where he served as vice president, and ten years with Jones & Lamson Machine Co., Springfield, Vt., where he was factory manager.

He is a graduate of the Massachusetts Institute of Technology and a member of the Western Pennsylvania Engineering Society.

Former Army Engineers Join Master Builders

The Master Builders Co., Cleveland, Ohio, a subsidiary of American-Marietta Co., has added Herbert K. Cook and Thomas M. Kelly to the company's research laboratory staff.

Mr. Cook was formerly chief of the concrete division Waterways Experiment Station, U. S. Army Corps of Engineers, Jackson, Miss. Mr. Kelly was masonry material research engineer in the National Bureau of Standards for ten years, and for six years he was field construction engineer for the U. S. Army Corps of Engineers on the Detroit, McNary, and Dorena Lookout dams.

Trailmobile Appointment

Serving as export manager for Trailmobile, Inc., Cincinnati, Ohio, is Charles H. Ducote. Before joining the organization, Mr. Ducote was with the industry division of the ECA in Paris, working on the development of measures to increase industrial productivity in Marshall Plan countries. For 14 years, he served as U. S. trade commissioner and commercial attache in a number of foreign capitals.

Mr. Ducote's offices are located at 52 Vanderbilt Ave., Trailmobile's New York City offices.

Heil Makes Changes In District Offices

A sales representation change made by The Heil Co. in the Detroit area now has that district served by Milwaukee-based personnel. Distributor accounts in Michigan are being covered by sales personnel from the Chicago and Cleveland district offices. Previously, a local office in Detroit served the area.

The former sales manager for the district, Roland Karste, is now general manager of Heil-Chicago, Inc., McCook, Ill., distributor of Heil products.

A similar change has been made in the Washington, D. C., area, where government contract work formerly handled by the Washington district office is now being done by the Washington Engineering Co. Distributor accounts in Virginia and Maryland are being served by the Heil eastern district sales office in Union, N. J.

International Harvester Shifts District Managers

Five personnel changes have been made by International Harvester Co., Chicago, Ill., in offices throughout the country. G. D. Partridge, International truck district manager at Cincinnati, Ohio, is now manager of the Detroit district. E. D. Maher, formerly assistant district manager at Cincinnati, succeeds Mr. Partridge. E. W. Dodson is new assistant manager at Cincinnati, and R. W. Stiegler is assistant district manager at Dallas. Taking Mr. Stiegler's place as assistant district manager at New Orleans is R. V. Ruth.

Goodyear Promotes Hudson

G. A. Hudson has been promoted to the post of manager of truck tire sales for Goodyear Tire & Rubber Co., Akron, Ohio, replacing H. E. Hoerster, who has resigned.

With the company since 1936, Mr. Hudson has held a number of executive positions. Mr. Hoerster joined the company more than 26 years ago.

Hyster Appoints Gruet

Serving as the new northeast district representative for Hyster Co., Portland, Oreg., is Charles P. Gruet. Hyster manufactures tools and attachments for Caterpillar tractors. Mr. Gruet, in the heavy equipment field for 24 years, most recently was manager and director of the 14 offices of Gailey & Roberts, Ltd., in Africa.

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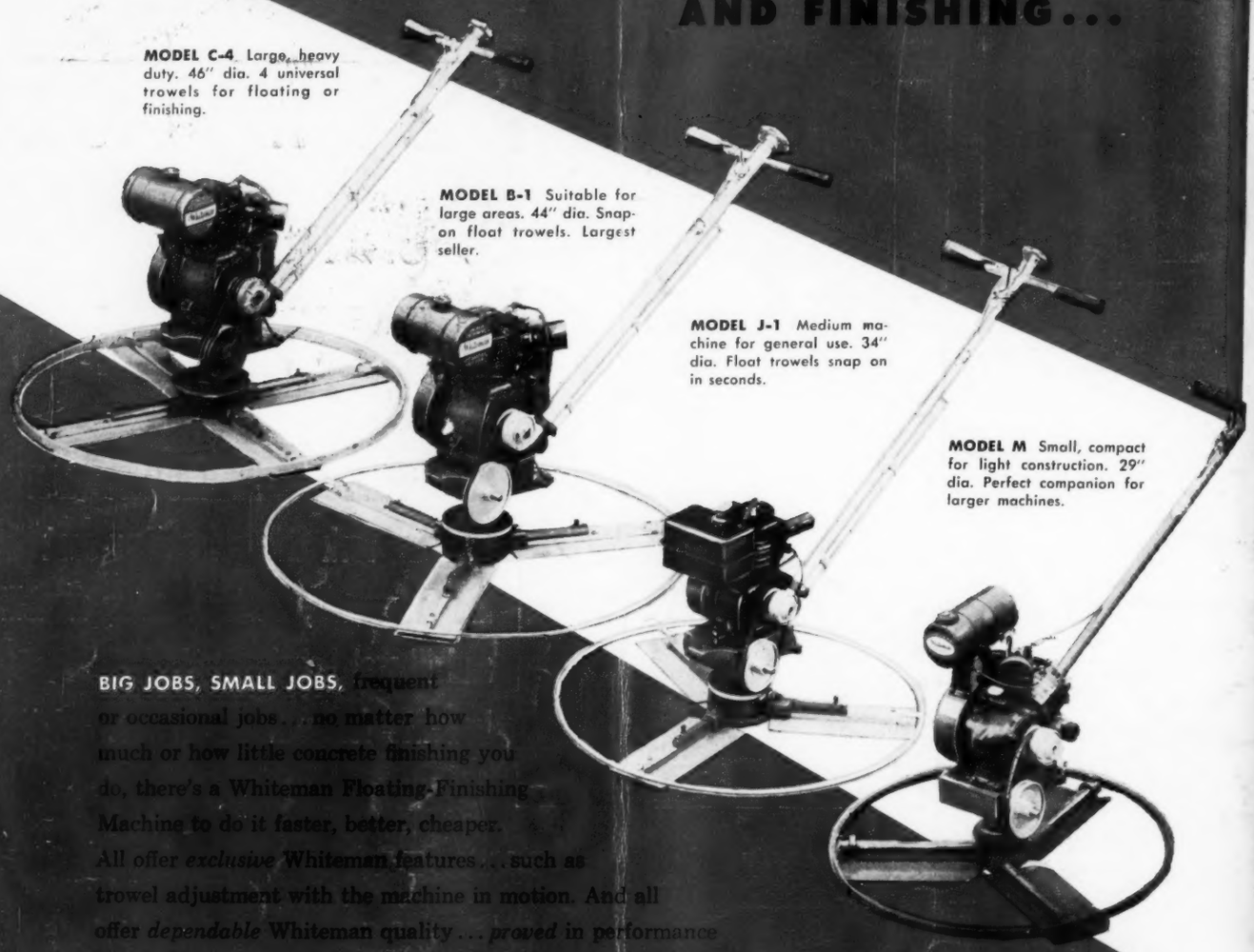

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